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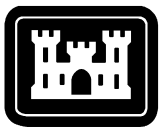

US Army Corps of Engineers
Waterways Experiment Station

Natural Resources Technical Support Program

Estimating the Local Economic Impacts of Recreation at Corps of Engineers Projects — 1996

by Dennis B. Propst, Daniel J. Stynes, Wen-Huei Chang, Michigan State University

R. Scott Jackson, WES

WES

Prepared for Headquarters, U.S. Army Corps of Engineers

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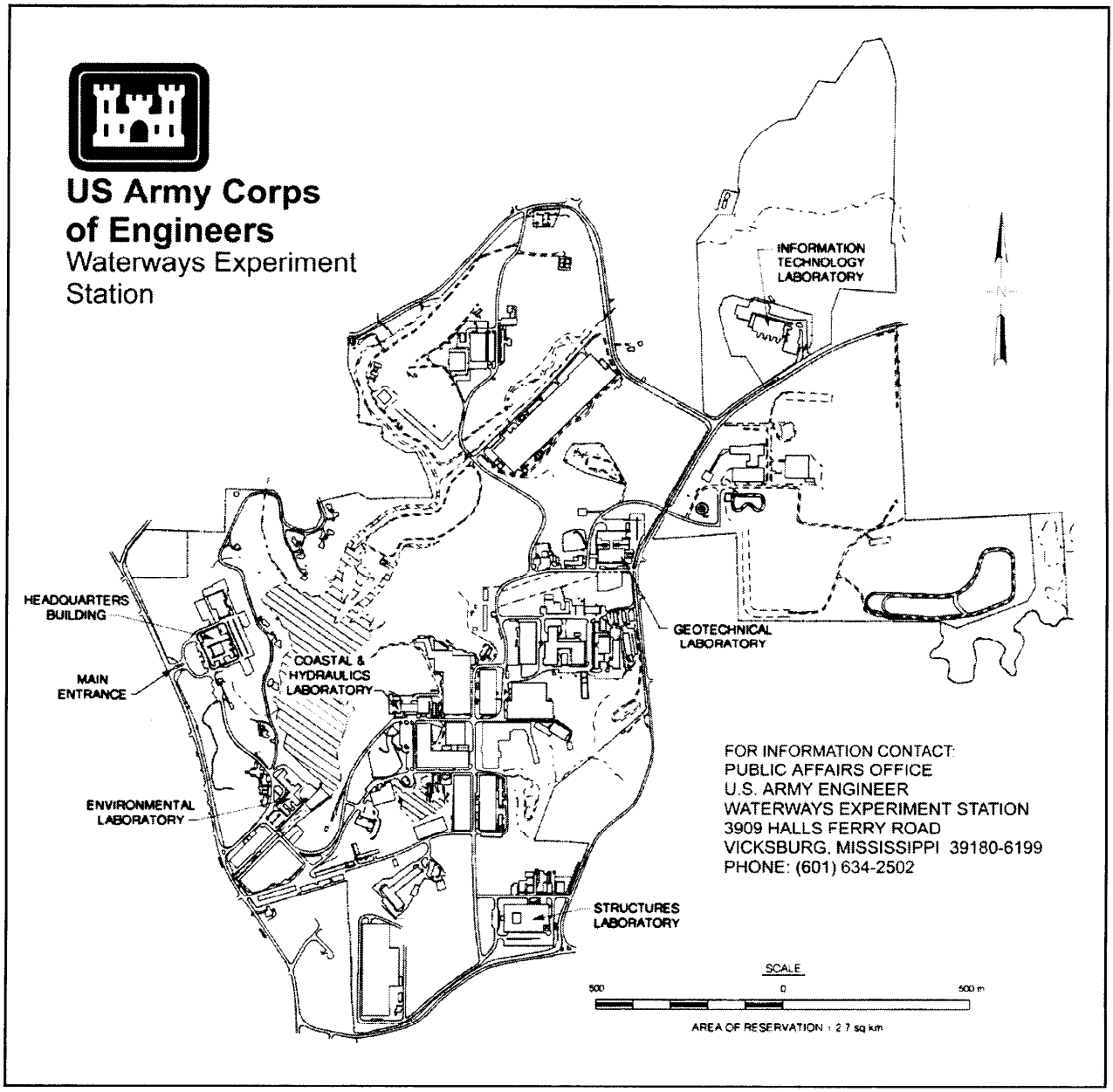

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Preface

The work reported herein was conducted as a part of the Natural Resources Technical Support (NRTS) program. The NRTS is sponsored by the Headquarters, U.S. Army Corps of Engineers (HQUSACE), and is assigned to the U.S. Army Engineer Waterways Experiment Station (WES) under the purview of the Environmental Laboratory (EL). Funding was provided under the Department of Army Appropriation No. 96X3123, Operation and Maintenance. The NRTS was managed by Dr. David J. Tazik.

This report was prepared by Dr. Dennis B. Propst, Dr. Daniel J. Stynes, and Mr. Wen-Huei Chang, Department of Recreation Resources, Michigan State University, and Mr. R. Scott Jackson, EL.

The study was supervised by Dr. H. Roger Hamilton, Chief, Resource Analysis Branch, Natural Resources Division (NRD), EL. General supervision was provided by Dr. Tazik, Chief, NRD, and Dr. John Harrison, Director, EL. Technical Reviewers were Ms. Kathleen Perales and Mr. Jim Henderson, EL.

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1 Introduction

The U.S. Army Corps of Engineers (CE) manages 456 water resource development projects throughout the United States. These lake and river projects provide significant recreation opportunities and benefits to visitors. Spending by visitors on goods and services associated with CE recreation opportunities generates sales, income, and jobs in local regions surrounding CE projects. The magnitude of these economic effects varies from project to project due to complex interactions between project characteristics (e.g., extent and type of recreation facilities) and regional economic characteristics (e.g., population size and number and type of retail establishments available for visitor spending). In this report, a simplified approach for estimating the economic impacts of recreation at the individual project level is presented. The approach focuses on aggregate estimates of impacts that can be derived using data available from the sources described in this report.

The purpose of this report is to estimate the economic effects of recreationists' spending within the local region surrounding each of the 456 CE projects. Such information is needed because decisions that affect project operations are based partially on the importance of the project to regional and national economies. Realistic estimates used to make such decisions stem from processes like the one presented in this report. In previous reports, impacts for 12 individual projects (Propst, Stynes, and Rutz 1995a-f; Stynes, Propst, and Rutz 1995g-l) and the Upper Mississippi River System (Carlson et al. 1995) have been estimated. Impacts of CE recreation activity have also been estimated at the national (Jackson, Stynes, and Propst 1994; Jackson et al. 1996) and State levels (Jackson et al. 1996).

At the national level in 1991, over $6 billion was spent by CE recreation visitors for trip-related items, resulting in $8 billion in household income and 404,000 jobs in industries directly and indirectly supplying goods and services to CE visitors (Jackson, Stynes, and Propst 1994). In 1994, these national estimates rose to $7.7 billion in trip-related spending, $14.7 billion in household income, and 443,000 jobs (Jackson et al. 1996). On a State-by-State basis, visitor spending ranged from $744 million on trips to CE projects in Arkansas to about $2 million on trips to CE projects in Alaska and Arizona. The employment effects of visitor spending in

these States ranged from 25,000 total jobs in Arkansas to around 40 jobs in Alaska and Arizona (Jackson et al. 1996). In the 76-county region along the Upper Mississippi River, $192 million in total trip and durable goods spending was associated with $90 million in employee wages and 5,800 jobs (Carlson et al. 1995).

Results cited above have all made use of the MI-REC system (Stynes and Propst 1996) to estimate visitor spending and economic impacts. MI-REC produces detailed estimates of spending for up to 12 visitor segments within as many as 33 spending categories. The MI-REC procedures bridge spending to an input-output model for the region surrounding a given project and estimate direct, indirect, induced, and total effects for as many as 528 economic sectors. MI-REC procedures require that users have access to the IMPLAN input-output modeling system (Alward and Palmer 1983; Taylor et al. 1993) and that they be sufficiently familiar with regional economic concepts and spreadsheet and IMPLAN software to carry out the analysis. Individual CE projects generally do not have the time and resources to carry out this analysis. Therefore, this report provides a modification of these procedures that can be carried out at the project level using available data and a simple worksheet/spreadsheet. The simplified procedures also permit the estimation of local economic impacts for all 456 CE projects.

The MI-REC procedures are simplified in several ways. Most importantly, the need to estimate an input-output model for the local region has been eliminated. Instead, guidance in selecting appropriate aggregate multipliers for a particular area is provided. The simplified procedures yield only aggregate estimates of spending, sales, income, and jobs. Spending patterns are generalized from previous studies, and visitation and segment shares are derived from the Corps' Natural Resource Management System (NRMS) database. The resulting simplifications provide a worksheet similar to the National Park Service's Money Generation Model (U.S. Department of Interior 1990). The worksheet is tailored to make use of the CE visitation and revenue databases, and the default parameters used in the model are derived from surveys and regional economic models for projects chosen to be representative of CE projects.

In order to develop this simplified approach, some judgment and assumptions were required to generalize visitor spending profiles and multipliers to projects where original data were not collected. Local project managers should play an active role in evaluating and modifying the assumptions and the values upon which these estimates were built. The simplifications and the worksheet were designed to facilitate the evaluation process at the project level.

2 Methods

Four factors must be estimated and multiplied together (Equation 1) to determine the economic impacts of visitor spending on a region: number of visits, spending per visitor, capture rate, and multipliers.

$$\textit{Economic impact} = \#\textit{ of visits} \times \textit{average spending per visit} \times \textit{capture rate} \times \textit{regional economic multiplier} \quad (1)$$

Visitation estimates come from counts of visitors reported annually by the CE in the NRMS database. These must be converted to party days (the units in which spending is measured) and then divided among the segments for which spending profiles have been estimated. Spending profiles come from visitor surveys at individual CE projects or can be adapted from studies at similar sites, as has been done in this report. Total spending is obtained by multiplying the per trip spending average of each segment by the number of trips by that segment and then summing across segments. Total spending is multiplied by a capture rate, which is the proportion of total visitor spending that is "captured" by a region's economy (i.e., the part that does not escape because of leakages to sectors outside the region). When total spending is applied to regional economic models for local regions around CE projects, the model indicates how much of that spending is captured. Regional economic impacts are then estimated by multiplying the "captured" total spending by regional economic multipliers. Multipliers are derived from regional economic models for the local regions around CE projects or can be taken from published multipliers for a region of a similar size and economic structure.

Three variations of Equation 1 are used to estimate the economic impacts of recreation. The 456 CE projects are divided into three groups, and a slightly different estimation approach is used for each group. The first group consists of the 12 projects included in the 1989-90 visitor spending study (Propst et al. 1992). Spending profiles were estimated from visitors at these projects, and local input-output models were estimated to derive multipliers for these regions. For these 12 projects, all three of the factors in Equation 1 are estimated with data specific to the particular projects, although spending profiles still must be generalized

over time using price indices. Due to small sample sizes within segments for individual projects, the spending averages are estimated using cases from all 12 projects.

In the second group are 96 projects for which local input-output models were estimated to derive the multipliers (Becker 1997). Using IMPLAN, the models were estimated for counties within 48 km (30 miles) of project boundaries.[1] Spending profiles were generalized from the segment averages for visitors to the 12 lakes in the first group. No spending surveys were conducted at these 96 projects, so it was assumed that, at least within segments, the averages for the 12 lakes in Group One may be applied.

For the final 348 projects in Group Three, both the spending averages and the multipliers were generalized from the previous two groups. Spending averages by segment are assumed to be the same as for the 12 lakes surveyed in 1989-90. Multipliers are derived by averaging the multipliers obtained from the input-output models constructed for the 108 projects in Groups One and Two. These 348 projects illustrate how both spending and multipliers may be generalized from other sites.

The variations of Equation 1 illustrate different assumptions made in order to generalize spending profiles and regional economic multipliers to Groups Two and Three projects. The observed variation in spending and multipliers across projects is reported to provide an indication of how much error may be involved in generalizing the averages to a particular project. More reliable estimates can be made for individual projects by conducting new visitor spending surveys at each project and estimating a regional economic model for the counties surrounding the project. However, this approach entails considerable cost for the surveys and requires access to and familiarity with regional economic models. Such primary data collection and modeling will be possible only in selected cases. Estimates based on secondary data and simple models rest heavily on the generalizability of the spending averages and multipliers from one project or region to another. The visitor segmentation approach implicit in the MI-REC system helps to capture variations in spending across different projects that are explained by the mix of visitors attracted. Differences in total spending are explained considerably by the differences in the number and types of visitors.

The simpler approaches illustrated in this report yield quick estimates of spending and impacts for all 456 CE projects. The estimates for individual projects may be refined by adjusting the spending averages or multipliers based on a good understanding of the visitors to a particular project and the economy of the surrounding region. Included in this report is a simple worksheet for computing economic impacts based on project specific-visitation data, existing spending profiles, and multipliers for

[1] The decision rules for selecting the counties that define local regions around the 96 CE projects are found in Becker (1997).

108 CE projects. CE project managers can easily update and refine estimates of spending and economic impacts for their project by entering new visitation figures and using some judgement to adjust or choose spending averages and multipliers that reflect their project and region.

A more detailed discussion of the procedures used to estimate visits, spending, and multipliers is provided in the remainder of this section. The steps for estimating economic impacts for a particular project are also illustrated on the worksheet in Appendix A, using Mark Twain Lake in Missouri as an example.

Recreation Visits by Segment

Recreation visitation was estimated using the PR_USE and CUR_FEE databases from the NRMS system. PR_USE contains a project-level reporting of total visitation and the percentages of campers, day users, and boaters among all visitors. These percentages are based on surveys and are therefore subject to sampling and other survey errors. Not all projects have conducted surveys in recent years; therefore, the estimates may be dated if use patterns have changed over time. CUR_FEE contains a site-by-site reporting of all the revenues and fees collected each year. CUR_FEE was thought to be a more accurate measure of camping visitation than PR_USE because CUR_FEE is updated annually. PR_USE is based on surveys that may have been conducted a number of years in the past. Total CE camping visitation nationally was 29.8 million visits in 1996 based on the PR_USE database, whereas camping visitation derived from the CUR_FEE database was only 7.6 million visits. The former is almost four times the revenue-based estimate.

The revenue-based estimate was assumed to be more accurate than the PR_USE data, although several assumptions were required to convert camping revenues to camper visits. Total campsite revenues (CG_FEE_REV) were divided by an average fee per night to estimate the number of camper party nights. An average fee of $8 per campsite per night was used taking into account fees at sites with and without electricity, fees at CE-managed and non-CE-managed facilities, and discounts for holders of Golden Age and Golden Access Passports. Party nights at CE-managed sites were then expanded to include non-CE-managed sites by assuming similar occupancy rates at CE- and non-CE-managed sites.

The number of camping party days was then converted to camper "visits" using an average camper length of a stay of 2.8 days and party size of 3.4. Camping party days must be converted to person visits to be consistent with the units for which total and day-use visitation are reported in the NRMS system (PR_USE database). A "visit" is defined as the entry of one person onto a CE project to engage in one or more recreation activities. As used in this study, a "person trip" is equivalent to a visit.

The number of day-use visits was derived by subtracting camping visits from total visits. Visitors who stay in hotels and other off-project lodging accommodations but visit the project for part of a day are treated as day users by the CE. Since these "other overnight" visitors have significantly different spending patterns than typical day users (Propst et al. 1992), it is important to separate them from day users to estimate spending. No information was available to estimate the percentage of day users staying overnight in the area. Following the assumption made in the 1994 study (Jackson et al. 1996), 1 percent of day users was set aside as other overnight visitors. This percentage should be adjusted for individual projects based on local information.

Campers, day users, and other overnight visitors were further divided into boaters and nonboaters based upon the proportion of boaters reported by each project in the 1996 NRMS database system. This resulted in six visitor segments:

a. Campers who boat.

b. Campers who do not boat.

c. Day users who boat.

d. Day users who do not boat.

e. Other overnight visitors who boat.

f. Other overnight visitors who do not boat.

Estimates of the number of visitors for each segment in person trips (visits) were converted to party days using average lengths of stay and party sizes for each segment (Table 1). The conversion to party days improves the ability to generalize spending profiles across projects. Visitor spending was originally measured in party trips. However, the use of party trips requires the questionable assumption that visitor length of stay does not vary across projects. Another reason for the conversion is that the party day is more similar than the party trip to the units in which the CE measures visitation. Information on party size is all that is needed to convert visits to party days, and party sizes tend to be more consistent across projects than lengths of stay. The formula for converting visits to party days is as follows:

$$party\ days = person\ visits \times \frac{average\ length\ of\ stay}{average\ party\ size}$$

Length-of-stay and party-size parameters were estimated based on Propst et al. (1992) and represent national averages. They may be adjusted on the worksheet (Appendix A) to better fit individual projects. Table 1

illustrates the conversion from person visits to party days at the national level. There were 375.7 million recreation visits to the 456 CE projects in 1996. This figure converts to 139.4 million party days. Summing across boaters and nonboaters in Table 1, day users accounted for 92.7 percent of all party days; campers, 4.5 percent; and other overnight visitors, 2.8 percent. Twenty-two percent of all party days were by boaters, 78 percent by nonboaters. The proportions of visitors from each segment vary widely for individual projects (see Appendix B).

Table 1
Summary of Recreation Visits to CE Projects, 1996

	Camper[1]		Day User[2]		Other Overnight[3]		
	Boat	Nonboat	Boat	Nonboat	Boat	Nonboat	Total
Visits (person trips, MM)	1.7	6.0	80.4	283.9	0.8	2.9	375.7
Average length of stay (days)[4]	3.0	2.7	—	—	3.8	3.1	—
Average party size[4]	3.6	3.3	2.9	2.8	3.4	2.9	—
Visits (party days, MM)	1.4	4.9	27.7	101.4	0.9	3.0	139.4

[1] Number of campers in party days was derived from the 1996 NRMS, CUR_FEE database by dividing total camping revenue by an average of $8.00 per party day camping fee and expanding by the number of non-CE-managed campsites (see Appendix A for example). Then, number of campers in person trips = number of party days × average party size ÷ average length of stay. Percent of boaters was obtained from the NRMS, PR_USE database.
[2] Number of day users in person trips was derived from the 1996 NRMS, PR_USE database by subtracting camper visits from total visits (see Appendix A for example). Then, number day users in party days = number of person trips × average length of stay ÷ average party size. Percent of boaters was obtained from NRMS, PR_USE database.
[3] Assume that 1 percent of day users stayed overnight in lodging accommodations outside of project boundaries.
[4] From 1994 national and State economic impact study (Jackson et al. 1996). The proportions of boaters and nonboaters were estimated from the results of the 12-lake study (Propst et al. 1992).

Visitor Spending Averages

Spending profiles for each of the six segments were estimated from the 1989-90 12-lake survey and price adjusted to 1996 dollars (Table 2). A spending profile shows the average amount spent per party per day for a given visitor segment. Trip spending includes spending on goods and services consumed during a trip such as gasoline, food, and lodging. Expenditures for durable goods (items like boats and recreational vehicles (RVs) that are used on multiple trips) were not included. Total visitor spending is obtained by multiplying average per party day spending by the number of party days for each segment and then summing the results across segments.

Typical CE visitors (i.e., the weighted average of the six segment spending profiles) in 1996 spent $40.15 per party per day within 48 km (30 miles) of the project (Table 2). Average spending varied from $129.36 per party per day for other overnight visitors who boat, to $33.24 per party per day for day users who do not boat. These national averages may be replaced in the worksheet (Appendix A) by project-level visitor expenditure data, when such data are available and accurate.

Table 2
CE Visitor Spending Profiles by Segment (per party per day, in 1996 dollars)[1]

Spending Category	Camper		Day User		Other Overnight		Average[2]
	Boat	Nonboat	Boat	Nonboat	Boat	Nonboat	
Hotels and motels	3.32	1.46	0.00	0.00	56.43	42.00	1.37
Camping	10.64	8.27	0.00	0.00	1.83	2.09	0.46
Grocery	14.76	13.21	11.45	7.64	15.33	9.00	8.75
Restaurant	5.52	5.11	3.81	8.14	13.89	13.10	7.29
Automobile and RV[3]	7.92	12.28	9.54	6.24	7.84	8.52	7.18
Boating[4]	14.22	0.00	18.01	0.00	20.84	0.00	3.89
Fishing and hunting[5]	1.78	0.73	1.94	0.81	2.67	3.26	1.11
Recreation and entertainment[6]	1.07	2.65	1.77	1.48	3.07	3.49	1.63
Miscellaneous[7]	6.69	5.81	7.73	8.94	7.47	5.72	8.49
Total	65.92	49.52	54.25	33.25	129.37	87.18	40.17

[1] Visitor trip-expenditure averages within 48 km (30 miles) of CE projects from Propst et al. (1992).
[2] Averages are weighted by the number of visits by each of the six segments.
[3] Includes gas, oil, rental, repairs, washing, and parts.
[4] Includes gas, oil, rental, repairs, parts, launch and transient slip fees, and boat fares on rivers, lakes, or canals.
[5] Includes temporary license fees (excludes annual license), fishing-boat charter fees, fishing bait, and ammunition and handloading materials for hunting.
[6] Includes rental fees for recreation equipment, fees for guide services, admission to spectator sports or tourism attractions, and other recreation expenses (bowling, golfing, etc.)
[7] Includes film purchasing and developing, video tape purchasing and processing, souvenirs and gifts, clothing, and all other expenses not listed above.

Multipliers

Multipliers for regions around CE projects were estimated using regional models constructed with IMPLAN. For each of the 108 projects in Groups One and Two, counties within a 48-km (30-mile) radius of the project were combined to form the local region (see Becker (1997) for details). An input-output model was estimated for each of these regions using the 1990 IMPLAN databases. The national average recreation spending profile was applied to each model (with 100,000 visits as level of recreation use), and the various aggregate multipliers were then calculated from the impact analysis. These multipliers therefore reflect the structural economic characteristics of each region. The aggregate multipliers are based on specific assumed recreation-spending profiles (Table 2), but can be applied generally to estimate the impacts of changes in recreation or tourism spending on the region.

The Type III multipliers were computed based on income rather than jobs to correct for a bias in the IMPLAN multiplier procedures. The induced effects estimated in the DOS version of IMPLAN (Version 91-F) assume an average salary associated with each job. As wages in recreation and tourism-related sectors are lower than average, this approach recirculates too much income as induced effects. Therefore, total income

generated was computed as direct and indirect effects and applied to the model using the distribution for an average household (IMPLAN's medium PCE vector). The total induced effect is the sum of the infinite series of these rounds of respending of income. For recreation spending, the revised induced effects are about half of those estimated with the standard IMPLAN Type III procedures. The adjusted multipliers are comparable with those from the newer Windows version of IMPLAN when Type II multipliers are used.

The averages and ranges of the multipliers across the 108 regions are shown in Table 3. Multipliers for the local regions around each of the 108 projects are reported in Appendix C. These individual project multipliers were used to estimate impacts for the 108 projects in Groups One and Two. The averages reported in the top half of Table 3 were used for the 348 projects in Group Three.

Table 3
Economic Multipliers for Regions Surrounding 108 CE Projects[1]

	Sales	Income[2]	Jobs[3]
Average Across 108 Regions			
Direct effects	1.00	0.52	33.27
Type I multiplier	1.18	0.61	36.00
Type III multiplier	1.66	0.87	44.71
Capture rate[4]	0.66		
Range (minimum - maximum)			
Direct effects		0.43–0.59	19.87–46.89
Type I multiplier	1.09–1.28	0.51–0.72	22.73–49.66
Type III multiplier	1.37–1.99	0.66–1.11	28.32–62.01
Capture rate[4]	0.53–0.83		

[1] Region defined as all counties within 48 km (30 miles) project boundary. Multipliers are based on IMPLAN-generated economic impact models constructed for 108 of the 456 projects (Becker 1997).
[2] Income per dollar of direct sales. Income includes employee compensation, proprietor, and other property income.
[3] Jobs per million dollars in direct sales.
[4] Capture rate is the percentage of visitor spending captured as direct sales within the region (see Appendix C).

The "average" project has a capture rate of 66 percent, meaning that 66 percent of visitor spending in the local region is captured locally as direct sales effects. Most of the "leakage" is visitor purchases of goods (e.g., gasoline, groceries, and souvenirs) that are not manufactured in the local area. Only the retail margins associated with these purchases generally accrue to the local economy. Capture rates varied from 53 to 83 percent, with most projects ranging between 60 and 70 percent.

Indirect effects associated with recreation spending were quite small and exhibited limited regional variation. The Type I sales multiplier captures indirect effects. The average project has a Type I sales multiplier of 1.18, meaning that each dollar of direct sales generates an additional 18 cents in sales in industries that supply goods and services to tourism businesses (i.e., "backward linked" industries). The Type I sales multiplier

varied only from 1.09 to 1.28 across the 108 projects. The Type III multiplier includes both indirect and induced effects. The average project has a Type III sales multiplier of 1.66, meaning that each dollar of direct sales generates 18 cents in indirect sales and another 48 cents in induced effects. Induced effects stem from household spending of income earned from the direct and indirect effects. Type III sales multipliers vary somewhat more from a low of 1.4 to a high of 2.0.

Income and job multipliers are used to convert direct sales to direct, indirect, and total income and employment effects. Type I income multipliers measure the total direct and indirect income associated with each dollar of direct sales. For an average project, each dollar of direct sales generates, in the local region, 52 cents in direct income, another 9 cents in indirect income (0.61 minus 0.52) and 26 cents in induced income (0.87 minus 0.61). Employment multipliers are defined similarly but on the basis of the number of jobs per million dollars in direct sales. For an average project, each million dollars in direct sales supports about 33 direct jobs, 3 indirect jobs (36 minus 33), and 9 induced jobs (45 minus 36) for a total job impact of 45 jobs per million dollars of direct sales.

The range of variation across the 108 projects is larger for Type III multipliers than Type I. Employment multipliers exhibit significantly greater variation than income and sales multipliers. Thus, while one cannot go too far wrong using the average Type I sales multiplier of 1.18 (these vary only about 6 percent from the mean), the values of income multipliers can vary as much as 15 percent from the mean and the employment multipliers by over 30 percent. Capture rates and multipliers will vary systematically with the size and economic development of the region. Larger regions with more diversified economies will have higher capture rates and multipliers. Adjusting the average multipliers according to the general economic development of the surrounding region can therefore capture a great deal of the variation in multipliers across individual projects. It is recommended that managers of projects in Group Three use multipliers from a project in Group One or Two that has a similar level of local economic development (see Appendix C).

3 Results

Estimates of visitation, spending, and economic impacts for all 456 projects are provided in Appendix B. A worksheet for computing these results is included in Appendix A. The worksheet has been completed using data for Mark Twain Lake. To estimate spending and impacts for any other project, one simply fills in the shaded cells (in some cases choosing to use the default values or to replace them) and completes the indicated calculations. The worksheet is also available as an Excel spreadsheet.

Individual project results are briefly interpreted below using Tables 4–7. These tables provide estimates of visits (Table 4), sales and spending (Table 5), income (Table 6) and employment for 36 selected projects. The results for all 456 projects are then aggregated into District, Division (Table 8), and national totals (Tables 9 and 10).

Table 4
Visits by Segments for 36 Selected CE Projects

Method[1]	Project	Visits in Party Days (1,000s)				
		Campers		Day Users[2]		
		Boat	Nonboat	Boat	Nonboat	Total
1	Cumberland	35.24	30.68	894.88	819.36	1,780.15
1	Dworshak	0.98	1.79	14.36	27.53	44.66
1	J. Percy Priest	3.39	18.85	331.08	1,937.09	2,290.41
1	McNary	0.96	9.49	136.10	1,420.85	1,567.40
1	Mendocino	8.53	29.68	60.33	220.85	319.38
1	Milford	4.98	17.33	36.96	135.29	194.55
1	Oahe	14.44	34.71	197.56	499.40	746.11
1	Ouachita	15.83	44.22	118.71	348.84	527.60
1	Raystown	10.84	28.77	80.71	225.30	345.62
1	Shelbyville	17.77	74.39	152.37	670.69	915.23
1	Sidney Lanier	41.35	82.43	813.02	1,704.33	2,641.14
1	Willamette Lakes[3]	5.31	11.61	178.49	410.19	605.61
2	Mark Twain Lake	18.60	27.39	222.99	345.36	614.34
2	Harry S. Truman	32.32	19.45	384.52	243.33	679.63
2	Blue Marsh Lake	0.00	0.00	48.34	158.05	206.39
2	Saylorville Lake	7.26	34.78	71.22	359.01	472.26
2	Lake Celilo	1.14	3.01	107.22	299.30	410.67
2	Lower Granite	3.23	10.61	82.46	285.05	381.35
2	Alum Creek Lake	1.61	18.19	70.72	839.72	930.24
2	William H. Harsha	5.08	22.71	91.81	431.84	551.44
2	Allatoona Lake	43.21	86.13	662.68	1,389.16	2,181.18
2	Whittier Narrows	0.00	3.33	0.00	783.39	786.72
2	Belton Lake	10.42	36.27	110.14	403.20	560.04
2	Murray	2.86	22.73	42.37	353.94	421.89
3	Rivers Project - Illinois River	0.00	0.00	33.33	63.90	97.23
3	Clinton Lake	4.87	21.80	52.00	244.56	323.24
3	Black Rock Lake	0.00	0.00	0.26	26.49	26.75
3	Almond Lake	0.24	4.43	2.92	57.35	64.94
3	Duluth-Superior Harbor	0.00	0.00	0.00	410.65	410.65
3	Blue River Lake	0.00	0.00	3.64	15.03	18.67
3	Beech Fork Lake	3.17	15.20	41.88	211.10	271.35
3	Brookville Lake	5.10	24.42	66.85	336.98	433.35
3	Four River Basins	0.00	0.00	15.35	63.41	78.77
3	Alamo Lake	2.56	0.75	16.92	5.22	25.44
3	Abiquiu Dam	0.19	2.18	2.14	25.44	29.96
3	Bardwell Lake	3.15	10.37	30.01	103.72	147.25
	456 Project Total	1,438	4,925	28,650	104,405	139,419
	456 Project Average	3.15	10.80	62.83	228.96	305.74

[1] Method 1 denotes the 12 projects where survey data were used to create the spending profiles (Propst et al. 1992); both Methods 1 and 2 denote 12 of the 108 projects where the IMPLAN economic impact models have been built (Becker 1997); Method 3 denotes 12 of the other 348 projects that use the national average economic multipliers. Projects from Methods 2 and 3 were selected here to illustrate CE's projects in different Divisions.
[2] Including other overnight visits.
[3] Willamette Lakes include Fern Ridge Lake, Cottage Grove Lake, and Fall Creek Lake. These three lakes were treated as a single project in the 12-lake survey (Propst et al. 1992) for sampling purposes.

Table 5
Regional Economic Impacts for 36 Selected CE Projects: Sales[1]

Method[2]	Project	Total ($MM) Spending	Sales Effects ($MM)			
			Direct	Indirect	Induced	Total
1	Cumberland	83.06	56.63	8.67	24.14	89.45
1	Dworshak	1.93	1.11	0.11	0.30	1.52
1	J. Percy Priest	87.33	60.29	15.02	37.95	113.27
1	McNary	57.70	35.48	6.05	15.32	56.86
1	Mendocino	13.14	8.31	1.47	4.48	14.27
1	Milford	7.99	5.03	1.13	2.33	8.49
1	Oahe	31.25	24.24	5.28	15.81	45.34
1	Ouachita	22.10	13.95	2.36	8.76	25.07
1	Raystown	14.55	9.19	1.38	4.60	15.16
1	Shelbyville	36.83	23.27	3.77	8.16	35.21
1	Sidney Lanier	112.19	74.98	14.98	40.60	130.56
1	Willamette Lakes[3]	25.31	16.23	2.25	9.59	28.07
2	Mark Twain Lake	27.24	16.85	3.59	8.94	29.38
2	Harry S. Truman	33.35	20.88	4.48	10.74	36.10
2	Blue Marsh Lake	8.24	5.39	0.97	2.75	9.11
2	Saylorville Lake	18.73	12.57	3.53	8.89	25.00
2	Lake Celilo	16.72	10.37	1.58	4.31	16.27
2	Lower Granite	15.33	9.51	1.60	5.17	16.28
2	Alum Creek Lake	34.24	22.67	4.93	9.98	37.59
2	William H. Harsha	21.69	14.76	3.55	8.02	26.34
2	Allatoona Lake	93.01	62.55	12.91	22.08	97.54
2	Whittier Narrows	27.43	22.70	5.67	12.45	40.82
2	Belton Lake	22.76	14.05	2.28	5.88	22.21
2	Murray	16.03	10.62	2.45	5.44	18.51
3	Rivers Project - Illinois River	4.11	2.70	0.49	1.29	4.47
3	Clinton Lake	12.86	8.43	1.52	4.02	13.97
3	Black Rock Lake	0.94	0.61	0.11	0.29	1.02
3	Almond Lake	2.40	1.57	0.28	0.75	2.60
3	Duluth-Superior Harbor	14.29	9.37	1.69	4.47	15.53
3	Blue River Lake	0.73	0.48	0.09	0.23	0.79
3	Beech Fork Lake	10.68	7.01	1.26	3.34	11.61
3	Brookville Lake	17.06	11.19	2.01	5.33	18.54
3	Four River Basins	3.08	2.02	0.36	0.96	3.34
3	Alamo Lake	1.35	0.88	0.16	0.42	1.46
3	Abiquiu Dam	1.13	0.74	0.13	0.35	1.23
3	Bardwell Lake	6.03	3.96	0.71	1.89	6.55
	456 Project Total	5,596	3,691	679	1,777	6,148
	456 Project Average	12.27	8.10	1.49	3.90	13.48

[1] Impacts on counties within 48 km (30 miles) of CE projects by visitor trip spending within 48 km (30 miles) of the projects.
[2] Method 1 denotes the 12 projects where survey data were used to create the spending profiles (Propst et al. 1992); both Methods 1 and 2 denote 12 of the 108 projects where the IMPLAN economic impact models have been built (Becker 1997); Method 3 denotes 12 of the other 348 projects that use the national average economic multipliers. Projects from Methods 2 and 3 were selected here to illustrate CE's projects in different Divisions.
[3] Willamette Lakes include Fern Ridge Lake, Cottage Grove Lake, and Fall Creek Lake. These three lakes were treated as a single project in the 12-lake survey (Propst et al. 1992) for sampling purposes.

Table 6
Regional Economic Impacts for 36 Selected CE Projects: Income[1]

Method[2]	Project	Income Effects ($MM)			
		Direct	Indirect	Induced	Total
1	Cumberland	26.64	3.62	12.28	42.54
1	Dworshak	0.58	0.06	0.17	0.81
1	J. Percy Priest	32.69	8.10	20.98	61.77
1	McNary	18.25	3.09	8.42	29.76
1	Mendocino	4.56	0.84	2.54	7.94
1	Milford	2.23	0.56	1.21	4.00
1	Oahe	11.40	2.63	8.49	22.53
1	Ouachita	7.39	1.26	4.78	13.43
1	Raystown	4.96	0.67	2.50	8.13
1	Shelbyville	11.30	1.98	4.39	17.67
1	Sidney Lanier	43.16	8.41	23.00	74.57
1	Willamette Lakes[3]	9.49	1.14	5.41	16.04
2	Mark Twain Lake	8.43	1.72	4.68	14.83
2	Harry S. Truman	9.79	2.04	5.61	17.44
2	Blue Marsh Lake	3.06	0.47	1.52	5.06
2	Saylorville Lake	6.91	1.96	5.05	13.92
2	Lake Celilo	5.89	0.81	2.47	9.17
2	Lower Granite	4.70	0.85	2.87	8.42
2	Alum Creek Lake	13.27	2.62	5.54	21.43
2	William H. Harsha	8.64	2.00	4.54	15.18
2	Allatoona Lake	36.62	7.34	12.84	56.80
2	Whittier Narrows	12.24	3.29	7.15	22.68
2	Belton Lake	7.42	1.26	3.34	12.01
2	Murray	5.83	1.38	3.06	10.28
3	Rivers Project - Illinois River	1.40	0.25	0.71	2.36
3	Clinton Lake	4.37	0.79	2.21	7.38
3	Black Rock Lake	0.32	0.06	0.16	0.54
3	Almond Lake	0.81	0.15	0.41	1.37
3	Duluth-Superior Harbor	4.86	0.88	2.46	8.20
3	Blue River Lake	0.25	0.05	0.13	0.42
3	Beech Fork Lake	3.63	0.66	1.84	6.13
3	Brookville Lake	5.80	1.05	2.93	9.79
3	Four River Basins	1.05	0.19	0.53	1.77
3	Alamo Lake	0.46	0.08	0.23	0.77
3	Abiquiu Dam	0.38	0.07	0.19	0.65
3	Bardwell Lake	2.05	0.37	1.04	3.46
	456 Project Total	1,914	355	975	3,244
	456 Project Average	4.20	0.78	2.14	7.11

[1] Impacts on counties within 48 km (30 miles) of CE projects by visitor trip spending within 48 km (30 miles) of the projects. Income includes employee compensation, proprietor, and other property income.
[2] Method 1 denotes the 12 projects where survey data were used to create the spending profiles (Propst et al. 1992); both Methods 1 and 2 denote 12 of the 108 projects where the IMPLAN economic impact models have been built (Becker 1997); Method 3 denotes 12 of the other 348 projects that use the national average economic multipliers. Projects from Methods 2 and 3 were selected here to illustrate CE's projects in different Divisions.
[3] Willamette Lakes include Fern Ridge Lake, Cottage Grove Lake, and Fall Creek Lake. These three lakes were treated as a single project in the 12-lake survey (Propst et al. 1992) for sampling purposes.

Table 7
Regional Economic Impacts for 36 Selected CE Projects: Jobs[1]

Method[2]	Project	Job Effects (number of jobs)			
		Direct	Indirect	Induced	Total
1	Cumberland	1,958	150	527	2,635
1	Dworshak	44	2	7	54
1	J. Percy Priest	1,649	216	606	2,471
1	McNary	1,252	96	296	1,644
1	Mendocino	267	24	77	367
1	Milford	202	19	47	268
1	Oahe	795	79	306	1,179
1	Ouachita	515	41	180	737
1	Raystown	345	22	83	450
1	Shelbyville	773	49	154	976
1	Sidney Lanier	2,054	202	657	2,913
1	Willamette Lakes[3]	587	29	181	797
2	Mark Twain Lake	640	51	177	868
2	Harry S. Truman	806	65	210	1,081
2	Blue Marsh Lake	172	13	44	229
2	Saylorville Lake	418	53	155	626
2	Lake Celilo	379	24	87	490
2	Lower Granite	389	28	110	526
2	Alum Creek Lake	680	69	155	904
2	William H. Harsha	427	50	128	605
2	Allatoona Lake	1,636	164	338	2,138
2	Whittier Narrows	451	65	157	673
2	Belton Lake	510	39	106	655
2	Murray	347	44	99	490
3	Rivers Project - Illinois River	90	7	23	121
3	Clinton Lake	281	23	73	377
3	Black Rock Lake	20	2	5	27
3	Almond Lake	52	4	14	70
3	Duluth-Superior Harbor	312	26	82	419
3	Blue River Lake	16	1	4	21
3	Beech Fork Lake	233	19	61	313
3	Brookville Lake	372	31	97	500
3	Four River Basins	67	6	18	90
3	Alamo Lake	29	2	8	39
3	Abiquiu Dam	25	2	6	33
3	Bardwell Lake	132	11	34	177
	456 Project Total	120,906	10,242	32,499	163,647
	456 Project Average	265	22	71	359

[1] Impacts on counties within 48 km (30 miles) of CE projects by visitor trip spending within 48 km (30 miles) of the projects.
[2] Method 1 denotes the 12 projects where survey data were used to create the spending profiles (Propst et al. 1992); both Methods 1 and 2 denote 12 of the 108 projects where the IMPLAN economic impact models have been built (Becker 1997); Method 3 denotes 12 of the other 348 projects that use the national average economic multipliers. Projects from Methods 2 and 3 were selected here to illustrate CE's projects in different Divisions.
[3] Willamette Lakes include Fern Ridge Lake, Cottage Grove Lake, and Fall Creek Lake. These three lakes were treated as a single project in the 12-lake survey (Propst et al. 1992) for sampling purposes.

Table 8
Summary Results for All CE Districts

Division	District	Visits in Party Days (1,000s)			Total[1] Spending	Sales Effects[1]		Income Effects[1]		Job Effects[2]	
		Camper	Day User[3]	Total		Direct	Total	Direct	Total	Direct	Total
Lower Mississippi Valley (LMVD)	St. Louis	279	5,274	5,553	230	147	237	73	119	5,140	6,743
	Vicksburg	191	3,640	3,832	158	101	160	51	82	3,550	4,658
	Subtotal	470	8,914	9,385	388	248	397	124	201	8,690	11,401
Missouri River (MRD)	Kansas City	390	4,492	4,882	207	134	231	67	119	4,797	6,536
	Omaha	313	4,850	5,163	203	138	234	71	123	4,494	6,170
	Subtotal	703	9,342	10,045	410	272	465	138	242	9,291	12,706
New England (NED)	New England	59	2,840	2,899	107	70	116	36	61	2,330	3,131
	Subtotal	59	2,840	2,899	107	70	116	36	61	2,330	3,131
North Atlantic (NAD)	Baltimore	96	678	774	32	21	35	11	18	733	972
	Norfolk	0	119	119	4	3	5	1	2	95	127
	Philadelphia	0	694	694	30	20	33	11	18	654	876
	Subtotal	96	1,491	1,587	66	44	73	23	38	1,482	1,975
North Central (NCD)	Detroit	0	722	722	25	17	27	9	15	552	742
	Rock Island	206	6,285	6,491	248	163	275	85	146	5,429	7,360
	St. Paul	86	3,500	3,586	170	111	184	58	97	3,704	4,977
	Subtotal	292	10,507	10,799	443	291	486	152	258	9,685	13,079
North Pacific (NPD)	Alaska	6	47	53	2	1	2	1	1	43	58
	Portland	68	4,116	4,183	168	109	176	58	95	3,652	4,804
	Seattle	21	856	877	33	22	36	11	19	724	973
	Walla Walla	58	2,636	2,695	103	65	105	33	55	2,301	3,053
	Subtotal	153	7,655	7,808	306	197	319	103	170	6,720	8,888
Ohio River (ORD)	Huntington	392	8,773	9,165	342	224	370	118	198	7,379	9,910
	Louisville	409	7,387	7,796	307	198	326	103	171	6,846	9,112
	Nashville	307	14,363	14,670	587	386	649	196	336	12,474	17,102
	Pittsburgh	114	2,227	2,341	94	62	103	32	55	2,067	2,792
	Subtotal	1,222	32,750	33,972	1,330	870	1,448	449	760	28,766	38,916
South Atlantic (SAD)	Jacksonville	192	2,413	2,605	106	69	115	36	61	2,309	3,103
	Mobile	518	11,570	12,088	515	334	539	179	291	10,222	13,673
	Savannah	320	6,649	6,970	285	188	311	98	165	6,030	8,159
	Wilmington	279	3,593	3,872	159	99	152	51	80	3,418	4,354
	Subtotal	1,309	24,225	25,535	1,065	690	1,117	364	597	21,979	29,289
South Pacific (SPD)	Los Angeles	14	2,643	2,657	93	73	129	39	71	1,661	2,397
	Sacramento	128	1,182	1,310	55	35	60	19	33	1,118	1,517
	San Francisco	0	44	44	2	1	2	1	1	34	46
	Subtotal	142	3,869	4,011	150	109	191	59	105	2,813	3,960
Southwestern (SWD)	Albuquerque	24	324	348	13	9	14	5	8	290	389
	Fort Worth	785	7,903	8,688	355	245	408	133	224	7,335	9,958
	Galveston	0	1,295	1,295	45	33	54	18	30	905	1,220
	Little Rock	502	13,288	13,790	561	365	644	188	337	12,814	18,073
	Tulsa	606	8,649	9,255	355	250	415	125	214	7,806	10,660
	Subtotal	1,917	31,459	33,376	1,329	902	1,535	469	813	29,150	40,300
All CE Project Total		6,363	133,052	139,417	5,594	3,693	6,147	1,917	3,245	120,906	163,645

[1] In millions.
[2] Number of jobs.
[3] Including other overnight visits.

Table 9
Summary of Total CE Visits and Spending

	Camper		Day User		Other Overnight		
	Boat	Nonboat	Boat	Nonboat	Boat	Nonboat	Total
Visits (Party Days, MM)[1]	1.4	4.9	27.7	101.4	0.9	3.0	139.4
Percent of total	1.0%	3.5%	19.9%	72.7%	0.7%	2.2%	100%
Total spending in local regions ($MM)[2]	94.8	243.9	1,504.8	3,370.2	118.5	263.6	5,595.8
Percent of total	1.7%	4.4%	26.9%	60.2%	2.1%	4.7%	100%

[1] From Table 1.
[2] Total spending = Average spending per party per day x visits in party days.

Table 10
Economic Impacts of Recreation Visitor Spending on 456 CE Projects

	Sales ($MM)	Income ($MM)	Jobs (number of jobs)
Direct effects	3,691	1,914	120,906
Indirect effects	679	355	10,242
Induced effects	1,777	975	32,499
Total effects	6,147	3,244	163,647

[1] Impacts on counties within 48 km (30 miles) of CE projects of visitor trip spending within 48 km (30 miles) of the projects.

Project Level Results

Twelve projects have been selected from each of the three groups to illustrate the findings. The first 12 projects in Tables 4-7 (labeled Method 1) are the 12 lakes included in the 1989-90 visitor-spending surveys. Estimates for these projects are based on spending surveys at these 12 projects and multipliers generated from input-output models for the regions around each project (Appendix C). The second 12 projects (Method 2) include a project from each division for which multipliers were directly estimated (Appendix C). The spending profiles in Table 2 were assumed to apply to visitors at these projects. The final 12 projects (Method 3) include a project from each division for which both national spending averages (Table 2) and multiplier averages (Table 3) were used. The 1996 NMRS project-specific data used for all 456 projects were annual visits, camping revenue, number of CE-managed and non-CE-managed campsites, and the percentage of visitors who were boating.

Mark Twain Lake serves to illustrate the interpretation of the findings, as well as the approach. Mark Twain Lake reported 1.636 million visits in 1996 with camping revenues of $297,864. There were 440 CE-managed campsites at Mark Twain Lake and 103 non-CE-managed campsites. Boaters accounted for 40 percent of the visits. Based on these data from the 1996 NRMS database, Mark Twain hosted 614,340 party days of recreation use including 46,000 party nights of camping (Table 4). Only 3.4 percent of visitors to Mark Twain are camping on the project based on

camping revenues. The NRMS figure for the percent of visitors camping at Mark Twain Lake is 10 percent. Recreation visitors to Mark Twain spent $27.24 million in the local area in 1996 (Table 5).

Mark Twain Lake is illustrative of projects in Group Two, as project-specific multipliers were estimated for the surrounding region using an input-output model. The multipliers for Mark Twain Lake are reported in Appendix B. Sixty-two percent of the $27.24 million in visitor spending is captured as direct sales by the local economy — $16.85 million in sales (Table 5). These direct sales generate another $3.59 million in indirect sales and $8.94 million in induced sales for a total sales effect of $29.38 million. The Type I sales multiplier for Mark Twain is 1.21, computed as direct plus indirect sales divided by direct sales (($16.85+$3.59)/$16.85).

Income (Table 6) and employment (Table 7) impacts for Mark Twain are interpreted similarly. Visitor spending generates $8.43 million in income and 640 jobs in sectors directly serving visitors. Another $1.72 million in income and 51 jobs are created in backward-linked industries through indirect effects. Total impacts including direct, indirect, and induced effects of the $27.24 million visitor spending are $29.38 million in sales, $14.83 million in income, and 868 jobs in the local region.

Mark Twain Lake is not the "average" project, as indicated by the multipliers and other model parameters. Mark Twain Lake has a higher than average percentage of campers and almost twice the percentage of boaters as an average project. Since campers and boaters spend more than day users and nonboaters, the project has a higher than average per-visitor spending ($44 per party day compared with a $40 per party-day average across all projects). The capture rate for Mark Twain is slightly lower than average, but slightly higher sales multipliers compensate for this difference. Income multipliers are slightly lower than average, while the employment multipliers are above average. This would indicate a region with lower than average wage rates. On balance, however, the impact results for Mark Twain would not be very different if the default average multipliers were used. In this case, the extra time and effort to estimate multipliers specific to this region do not substantially alter the results.

Assumptions and Sources of Error

The estimates for Mark Twain serve to illustrate the assumptions underlying the simplified approach and some of the potential sources of error. It is assumed that the visitation figures are correct as are the allocations of visits to various segments. There are likely errors in the camping share given the discrepancy between the revenue-based share and the percentage reported in NRMS (PR_USE). The assumption that 1 percent of day users are staying overnight in the area needs to be evaluated. If there are extensive overnight facilities on the project (other than camping) or in the

surrounding area (including private campgrounds), the percentage of day visitors staying overnight may be substantially higher than 1 percent. Spending and impacts would then also be higher. The reported 40 percent of visitors boating is much higher than average and, if incorrect, could also be a source of error in the spending and impact estimates.

The approach assumes that the average segment spending profiles in Table 2 adequately represent Mark Twain Lake visitors. Errors in the spending estimates will occur if Mark Twain Lake visitors tend to spend considerably more or less than the averages in Table 2. If so, the spending figures should be adjusted on the worksheet. Since the multipliers are directly estimated from an input-output model for the Mark Twain region, they should be reasonably accurate. Readers should be aware however that multipliers can vary by as much as 10 percent across different models for the same region (e.g., a model estimated with IMPLAN versus a RIMS II model), so that some error in the multipliers is inevitable when a complex input-output model is used.

The economic impact results reported here are what Jackson et al. (1992) have called a "significance analysis." That is, they include the impacts of spending by both local residents and visitors from outside the local region. A strict "impact analysis" would only include the spending of nonresidents, as this spending represents "new" dollars to the region's economy. All of the local region's economic activity associated with visitor spending would not necessarily be lost if recreation was not provided at Mark Twain Lake. The economic activity reported in Tables 4-7 and Appendix B should therefore be interpreted as economic activity associated with recreation on Mark Twain Lake. This activity is a measure of the significance or importance of the project to the local economy. It is fairly straightforward to adapt the worksheet to carry out a true impact analysis (i.e., including only nonresident spending), but this requires good information on the percentage of visitors within each segment that come from outside the local region. At this time, most CE projects have only a rough idea of the percentage of day users and campers coming from outside the local region.

District and Division Impacts

The availability of visitation, spending, and economic impact estimates for all 456 CE projects makes it a simple task to generate economic impacts for CE Districts and Divisions. Division and District totals are reported in Table 8. It should be noted that these are simply aggregations of the local impacts of individual projects in each District or Division. The findings do not therefore cover all impacts on the larger region, but only the sum of the impacts on local areas around projects in a given District or Division. A complete estimate of impacts for the larger regions would need to include visitor spending outside local areas surrounding each project and should employ multipliers for the larger region.

Approximately two-thirds of the income and employment effects occur in 3 of the Corps' 10 Divisions. Fifty-five percent of these effects occur in 7 of the Corps' 31 Districts. Comparisons of the relative impacts of projects in each District or Division should take into account the demographic and economic characteristics of the regions. For example, a thousand jobs in a District with relatively low population and economic activity have a much greater relative impact than a thousand jobs in a heavily populated, economically diverse District. Nonetheless, District and Division personnel may find these comparisons useful, especially when compared with the economic impacts of other industries (e.g., agriculture or manufacturing) in a given District or Division.

National Economic Effects

The aggregation may be taken one step further to the national level, with the same caveats as above. Multiplying visitation at all 456 projects (Table 1) by average spending (Table 2) yields a total of $5.6 billion in trip-related expenditures associated with recreational use of CE projects in 1996 (Table 9). These are trip expenditures only within 48 km (30 miles) of CE projects and not total trip expenses. Day users account for 87 percent of this total. Other overnight visitors account for 7 percent of total spending as compared with 6 percent for campers. The other overnight estimate is based on a somewhat arbitrary estimate that 1 percent of day-use visitors are staying overnight in the area. Boaters account for 22 percent of party days on CE projects and 31 percent of all spending.

In 1996, the $5.6 billion in visitor spending associated with the CE recreation program resulted in direct effects of approximately $1.9 billion in income and 121,000 jobs within the counties around CE projects (Table 10). When secondary effects are considered, the local economic effects of CE visitor spending totals over $3.2 billion in income and 164,000 jobs. It is important to recall that these impacts are the result of spending by CE visitors locally (within 48 km (30 miles) of a project's borders) and employ local area multipliers, not national ones. Total effects represent slightly more than 0.1 percent of total U.S. jobs and income. In terms of secondary impacts, induced effects dominate indirect effects by about 3 to 1. This reflects the labor-intensive nature of the tourism industry.

4 Errors in Applying the Simplified Approach

As a prelude to recommendations for refining these estimates and updating them on a regular basis, potential errors involved in the suggested approach need to be assessed and acknowledged. Discussion of errors in economic impact estimates is quite rare. Although regional economic analysts are well aware of a wide range of potential errors in their estimates, these errors are difficult to quantify, given the number of assumptions and judgements that are involved in the models. There is a tendency to assume that methods based on subjective judgements and simple models are prone to larger errors than those based on complex models and primary data gathering. This is not necessarily the case. The degree of error depends on the quality of the subjective judgements versus the validity of model assumptions and accuracy of estimates from statistical samples. Both spending surveys and regional economic modeling efforts are subject to potentially large errors if the studies are not carefully conducted. There are also cases where a manager's or researcher's judgements about visitor numbers or characteristics have proven to be far off the mark.

Errors in estimates of economic impacts can arise from each of the three factors in Equation 1. In applying the simplified approach, errors are largely due to generalizing a national average or value from a different project or region to the particular application. These errors can be reduced considerably by revising or replacing the default spending and/or multiplier values based on sound judgement or better local information about visitors. Project managers can use the worksheet in Appendix A to refine or update the spending and impact estimates for individual projects.

Visitation

The economic impact results are sensitive to the number of visits as well as estimates of the proportion of visits across distinct visitor segments. Visitation figures should be accurate, although there are questions about how or whether to include visitors who are not engaged in any

specific activity at the project. These "sightseers" can represent a fairly high percentage of use at some projects. For impact estimates, the issue is whether the day-use spending profiles adequately represent sightseers and more substantively whether sightseer spending and associated impacts should be attributed to the project.

The proportion of campers and other overnight visitors staying off the project are important, as these segments spend significantly more than day users. Taking into account length of stay, a typical camper party spends over $150 in the local region during the stay, compared with about $40 for a typical day-use party. Visitors staying overnight in the area will also spend substantially more than day users.

CE data on the numbers of campers and other overnight visitors are less reliable than the overall visitation numbers. The estimates of the percentage of visitors that are camping on each project varied considerably depending on which source of data was used. Using camping revenues, 2 percent of CE visitors nationally were estimated to be camping. The percent based on the "percent camping" reported in the NRMS (PR_USE) database was 8 percent. Camping estimates are even more variable for individual projects, suggesting that camping estimates can be off by over 400 percent, depending on which estimate is used and which is correct. For example, the camping percentage for Mark Twain Lake in the NRMS database is 10 percent, while the revenue-based estimate is only 3.4 percent. Using the 10-percent figure at Mark Twain Lake would increase the visitor spending estimate by 13 percent, from $27 million to $31 million. Thus, large errors are possible if accurate visitation figures are not fed into the NRMS. This potential for error underscores the need for local project staff to be involved in identifying questionable results and providing more accurate information when available.

Projects do not have reliable information about the number of visitors staying overnight in the area off CE project lands. The "other overnight" segments should also include visitors staying in motels, lodges, and cabins on the project. These visitors spend three times what a day user spends on a per day basis and about 10 times as much on a per visit (trip) basis. Lacking good data on overnight visitors, 1 percent of day users were assumed to be staying overnight in the area. Each 1,000 additional day users who are staying overnight off the project increases visitor spending by $80,000. Thus, a change from 1 to 2 percent for other overnight visitors would increase spending by $80,000 at a project with 100,000 day users.

The percentage of visitors estimated to be boating also influences the spending and impact estimates, as boaters spend from 30 to 60 percent more than nonboaters. For example, if the percent boating is incorrectly estimated at 10 percent when it is actually 20 percent, total spending would be underestimated by about 5 percent.

The overall estimate of visits is the most important parameter, as the estimates of the number of visitors and party days within each segment are derived as proportions of this total. Average party-size and length-of-stay parameters will also introduce potential errors, as these are used in converting visits to a party-day basis. Taking all of these potential sources of error into account, the speculation is that errors in the estimates of the percentages of visitors from each segment will introduce errors in the spending and impact estimates in the range of 5-15 percent. If there are large numbers of day users staying overnight that are not properly accounted for, the errors can be much greater. Large errors in estimating the total number of visitors would, of course, also produce significant errors in the spending and impact estimates.

Spending Averages

The spending averages come from surveys of visitors and are, therefore, subject to sampling and other errors. Sampling errors for the 12-lake averages for individual segments are generally between 5 and 20 percent (95-percent confidence intervals). Fortunately, the spending estimates are most reliable for the largest segments — day users and campers. Sampling errors in the survey estimates of spending can therefore introduce errors of about 10 percent in total spending estimates; however, these are not the errors that are the biggest concern.

When used to estimate impacts for a particular project, the issue is how well the spending averages reflect visitors to that project. Some idea of the potential error in generalizing the segment spending profiles to individual projects can be gleaned from the range of variation across the 12 lakes included in the spending survey. Segment spending averages for these individual projects generally fell within 33 percent of the 12-lake averages. As some of this variation is likely due to sampling errors (given small samples within segments at individual projects), the use of the national averages at individual projects will likely introduce errors of less than ±25 percent for most projects. Projects with unique spending patterns should not use the national averages. For example, spending by overnight visitors that were boating at Lake Cumberland were more than double the national average due to a large proportion of houseboat rentals. Other projects with significant onsite commercial development will also experience higher rates of spending.

Multipliers

Across 108 projects for which multipliers were estimated, the capture rates varied, from an average of 66 percent, by less than ±10 percent for most local regions. Type I sales multipliers exhibit even less variation,

ranging by about ±6 percent around the mean of 1.18. Type III multipliers and income and employment ratios vary more widely around their means, although most of this variation is predictable based on the degree of economic development of the region. The Type I income multiplier and Type III sales multipliers vary by ±15 percent, while the employment multipliers vary by as much as 35 percent from the mean across the 108 regions.

Applying the average multiplier values to individual projects will generally contribute errors of less than 10 percent in estimating the direct and indirect sales effects. Errors can be slightly larger for the direct and indirect income effects, and can be as high as 20 percent in estimating induced effects. Employment ratios and multipliers exhibit even greater variation, and the averages should therefore be used with some caution. Projects for which multipliers are not reported in Appendix C should replace the averages in the worksheet with multipliers from a similar region to refine the impact estimates.

Since any errors in estimates of the direct effects will be multiplied by these multipliers, obtaining accurate estimates of visits and spending first is of paramount importance. The direct effects are by definition more directly associated with recreation on CE projects and therefore deserve the most attention.

Cumulative Effect of Errors

It is difficult to estimate the cumulative effect of all the sources of error. This is because the cumulative effect depends on whether the errors in each factor (visitation, spending, and multipliers) are in opposite directions and "cancel" each other or whether they simply "add up." Since input-output analysis is linear (the larger the inputs, the larger the outputs), errors of 100 percent in visitation estimates will result in similar errors in spending and impact estimates. At present, it is not possible to estimate the error associated with total visitation in the NRMS. However, a source of potentially large error in the estimate of the percentage of campers was detected. Therefore, most effort should be directed at obtaining accurate total visitation estimates as well as proportions of campers, day users, boaters, and other visitor segments.

5 Conclusions and Recommendations

The economic effects of visitor spending associated with recreational use of CE projects can be estimated using data that are regularly gathered and reported in the NRMS databases. The accuracy of these estimates depends on several factors: accuracy of the recreation-use estimates, proper allocation of total use to visitor segments, applicability of the spending profiles for each visitor segment, and the appropriateness of the regional economic multipliers for the surrounding region. The highest priorities for improving the accuracy of spending and impact estimates would appear to be improvements in the recording of visitation data and conducting additional spending surveys. The analysis and findings in this report suggest a number of ways to improve the CE estimates of use and spending.

a. Data on campsite occupancy, generally available at the project level, should be added to the NRMS database. Reliable data on the number of camping party nights (occupied site nights) is more directly useful for estimating camper spending than camping revenue or the percentage of visitors who are camping. Revenue data are confounded by distinct fees and charges. Estimating campers as a percentage of all users creates large errors when survey estimates of this percentage are applied to the large number of visitors. The most useful information for campers is the number of party nights or equivalently occupied sites. These data should also be available for non-CE-managed campgrounds.

b. Surveys should estimate the proportion of CE day users staying overnight off the project in motels, campgrounds, etc. These visitors have different spending patterns than day users and can have significant impacts on the local economy. Overnight stays in lodges, motels, and cabins on CE projects should also be separated from day users and included in the "other overnight" category.

c. New surveys should be conducted to update the spending profiles and provide averages for a wider range of projects. The spending data used here are 8 years old. While price indices perform quite well in

updating the spending averages, averages for a wider range of projects are needed to better understand how spending averages vary across projects. Attempts to develop models to explain variations in spending across projects have been unsuccessful, in part due to small samples at only a small number of projects. Becker (1977) provides recommendations for projects that would be good candidates to sample in future expenditure surveys.

d. Multipliers seem to be of somewhat lower priority in terms of their contribution to error. Multipliers can vary by as much as 10 percent between different models for the same region (e.g., between an IMPLAN and RIMS II model), so errors of 10 percent or less in the multipliers should be expected. The Type I multipliers from IMPLAN exhibit fairly limited variation across the regions around CE projects. With readily available input-output modeling packages like IMPLAN, one can obtain multipliers for any local region at little expense. Errors due to multipliers are more likely to come from misuse than estimation errors.

The economic impacts estimated in this report may be used to assess the CE recreation program at the project, District, or Division levels. The results may be used to evaluate the potential economic effects of natural resource allocation and management decisions affecting recreation opportunities at all three levels. For example, given acceptance of the visitor spending profiles and multipliers presented herein, individuals may conduct "what if" analyses. The likely impacts of a change in recreation use can be estimated using the worksheet in Appendix A. Instead of entering total annual use, one would enter the change in the number and types of visitors. Spending averages and other parameters can also be adjusted to reflect the policy or action being evaluated.

The worksheet in Appendix A is provided so that project managers can also refine and update the impact estimates for their project. The underlying Excel spreadsheet for these computations may be downloaded from the WWW (*http://www/msu.edu/user/stynes/usace*). The spending and impact estimates may be refined by replacing the default values for any of the variables in the spreadsheet (shaded cells) with better estimates for a given project. The impact estimates can also be easily updated by substituting visitation data in future years. The spreadsheet version of the worksheet includes price indices for updating the spending averages over time and other tips for choosing appropriate values for each cell.

CE projects vary considerably in project characteristics, levels and types of recreation activity, and in terms of the nature of the economy of the surrounding region. Visitor spending and its impacts on the local economy depend on all of these factors. The simplified economic impact procedures presented herein attempt to capture as many of these factors as possible to explain variations in spending and associated impacts at different projects. The procedures rely entirely on available data, while also suggesting new data gathering and reporting procedures that could improve

the estimates. The simplified impact estimation procedure is designed to give quick aggregate estimates of economic impacts at the project level. When more detailed estimates are needed and when time and resources permit, the MI-REC system should be used.

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Appendix A
Worksheet for Estimating Economic Impacts of Visitor Spending at Corps of Engineers (CE) Projects

CE Economic Impact Estimator

Mark Twain Lake

Line 1	1. Enter number of visits to the project	1,636,607
	2. Determine the number of camper party nights at CE sites	
Line 2	Enter total camping revenue (CE sites)	297,864
Line 3	Enter average revenue per site	*$8.00*
Line 4	Camper party nights = Line 2 ÷ Line 3	37,233
	3. Add campers at non-CE-managed sites	
Line 5	Enter number of CE-managed sites	440
Line 6	Enter number of non-CE-managed sites	103
Line 7	Expansion factor (Line 5 + Line 6) ÷ Line 5)	1
Line 8	Total camper party nights (Line 7 x Line 4)	45,949
	4. Convert campers to person visits	
Line 9	Enter average camper length of stay	*2.8*
Line 10	Camper party visits = Line 8 ÷ Line 9	16,410
Line 11	Enter average camping party size	*3.4*
Line 12	Camper person visits = Line 10 x Line 11	55,795
Line 13	Percent of visitors camping (Line 12 ÷ Line 1)	3.4%
	3. Determine day use visits	
Line 14	Day use person visits = Line 1 – Line 12	1,580,812
	4. Estimate number of "other overnight" visitors	
Line 15	Enter pct of day users staying overnight off project	*1.0%*
	Enter pct of day users staying overnight on the project	*0.0%*
Line 16	Number of overnight off-project visits (Line 14 x Line 15)	15,808
Line 17	Pure day users (Line 14 – Line 16)	1,565,004

5. Estimate number of boaters and nonboaters in each segment (person visits)

Line 18	Enter pct boating by segment in this column →	Boaters	Nonboaters	Total
	day user 40%	626,002	939,002	1,565,004
	camper 40%	22,318	33,477	55,795
	overnight off project 40%	6,323	9,485	15,808
	Total	654,643	981,964	1,636,607

6. Enter party size and length of stay factors

Line 19	Party size		Length of stay	
	Boaters	Nonboaters	Boaters	Nonboaters
day user	*2.90*	*2.80*	*1.0*	*1.0*
camper	*3.60*	*3.30*	*3.0*	*2.7*
overnight off project	*3.37*	*2.94*	*3.8*	*3.1*

7. Convert to party days/nights by setment. (person visits x length of stay ÷ party size)

Line 20	Boaters	Nonboaters	Total	Percent
day user	215,862.59	335,357.95	551,221	90%
camper	18,598.37	27,390.32	45,989	7%
overnight off project	7,130.07	10,001.05	17,131	3%
Total	241,591	372,749	614,340	100%
Percent	39%	61%	100%	

Line 21 8. Enter/edit segment spending averages (per party night)

	Spending within 30 miles		Default values	
	Boaters	Nonboaters	Boaters	Nonboaters
day user	*$54.26*	*$33.24*	$54.26	$33.24
camper	*$65.93*	*$49.52*	$65.93	$49.52
overnight off project	*$129.36*	*$87.17*	$129.36	$87.17

Line 22 9. Compute total spending ($MM's) (per party night spending times number of party nights)

	Spending within 30 miles ($MM)			
	Boaters	Nonboaters	Total	Percent
day user	$11.71	$11.15	$22.86	84%
camper	$1.23	$1.36	$2.58	9%
overnight off project	$0.92	$0.87	$1.79	7%
Total	$13.86	$13.38	$27.24	100%
Pct	51%	49%	100%	

Line 23 10. Enter multipliers for the region

	Mark Twain Lake	Defaults
Capture rate	62%	66%
Type I sales	1.21	1.18
Type III sales	1.74	1.66
Income/sales direct effects	50%	52%
Income/Sales Type I	60%	61%
Income/Sales III	88%	87%
Jobs/Sales direct	38.00	33.27
Job/Sales I	41.01	36.00
Job/Sales III	51.52	44.71

Line 24 11. Compute Direct, Indirect, Induced, and Total Effects

	Sales ($MM)	Income ($MM)	Jobs
Direct Effects	$16.85	$8.43	640
Indirect Effects	$3.59	$1.72	51
Induced Effects	$8.94	$4.68	177
Total Effects	$29.38	$14.83	868
Person Visits	1,636,607		
Party Days/nights	614,340		
Visitor Spending ($MM)	$27.24		

Formulas for Line 24

Direct sales = total visitor spending × capture rate

Direct income = direct sales × direct income ÷ sales ratio

Direct jobs = direct sales × direct jobs ÷ sales ratio

Indirect sales = direct sales × (Type I sales multiplier – 1)

Induced sales = direct sales × (Type III sales mult. – Type I sales mult.)

Total sales = direct sales × Type III sales multiplier = direct + indirect + induced effects

Indirect income = direct sales × Type I income multiplier – direct income

Induced income = direct sales × Type III income multiplier – direct income – indirect income

Total income = direct sales × Type III income multiplier = direct + indirect + induced income

Indirect jobs = direct sales × Type I jobs multiplier – direct jobs

Induced jobs = direct sales × Type III jobs multiplier – direct jobs – indirect jobs

Total jobs = direct sales × Type III jobs multiplier = direct + indirect + induced jobs

Worksheet Notes by Line Number

Line 1 Field VISITS from PR_USE NRMS database. (in person visits)

Line 2 Field CG_FEE_REV from CUR_FEE database, includes all camping revenue at CE-managed sites

Line 3 This should reflect the average fee paid per night per site. The $8 default is an estimate taking into account variation between sites with or without electricity, and discounts for Golden passport and access programs.

Line 4 If the number of camping party nights is known, it can be directly entered on Line 4 and then Lines 2 and 3 are unnecessary.

Line 5 Include all campsites covered by the camping fees reported on Line 2.

Line 6 Any campsites on the project not covered by the camping fees reported on Line 2 should be included.

Line 7 This factor expands use from CE-managed campsites to all sites.

Line 8 If the number of party nights on non-CE sites is known, add this to Line 4 and enter the total on Line 8. Lines 5-7 are then not needed.

Line 9 Substitute a local value for the average length of stay by campers, if available.

Line 10

Line 11 Substitute a local value for the average number of people per camping party, if available.

Line 12 A person visit is one person entering project. Campers should be counted only once during their stay.

Line 13 This is the percent of visitors (person visits) that are camping.

Line 14

Line 15 There are two groups of "other overnight visitors": those staying overnight off project in the local area and visitors staying in lodges, motels, cabins, and other accommodations (except campgrounds) on the project. Enter each as a percentage of day use visits.

Line 16

Line 17 Pure day users are not staying overnight in the local area (unless they live there)

Line 18 The percent boating is the field BOATING from PR_USE database. Only a single percentage is reported for all visitors in the NRMS. The percentage may be varied across the three segments here, if differences are known. Otherwise enter the NRMS value in all three cells.

Line 19 Local values for party size and length of stay may be substituted, if known. For visitors staying overnight off project, spending is only counted for days that they visited the project by entering a length of stay of 1.0. This avoids double counting of spending by those who make multiple visits during their stay.

Line 20

Line 21 Replace or adjust spending averages to suit local conditions or based on a local survey.

Line 22

Line 23 Default multipliers may be pasted in or replaced by values from a similar region. See Appendix C to find multipliers for 108 CE projects. For projects not listed, use multipliers for projects in a similar regional economic setting.

Line 24

Other Notes

1. One can easily evaluate the sensitivity of results to any of the worksheet parameters by changing one or more cells and observing the effect on total spending or impact measures. Advanced Excel users can also make use of Excel's built in "What if" analysis tools.
2. This initial version of the worksheet does not fully account for visitors staying in lodges, cabins, or motels on the project. Look for updated versions of this worksheet that more fully capture spending of overnight visitors at our website.

Appendix B
Summary Results for All Corps of Engineers Projects

Table B1
Summary Results for All Corps of Engineers Projects

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
LMVD	St. Louis	# Mark Twain Lake	40	45.99	568.35	614.34	27.27	16.85	29.38	8.43	14.83	640	868
		# Carlyle Lake	17	69.23	800.41	869.64	34.38	21.53	32.48	9.86	15.47	786	989
		R.S Project - Illinois R.	35	0.00	97.23	97.23	4.11	2.70	4.47	1.40	2.36	90	121
		R.S Project - Upper R.	30	0.00	1,227.82	1,227.82	50.60	33.19	54.98	17.21	29.03	1,104	1,484
		R.S Project - Lower R.	35	0.00	338.50	338.50	14.32	9.39	15.56	4.87	8.21	312	420
		# Rend Lake	30	49.16	476.92	626.08	26.46	17.81	26.45	8.27	12.80	575	733
		!# Shelbyville	19	92.17	823.06	915.23	36.83	23.27	35.21	11.30	17.67	773	976
		# Wappapello	31	22.83	841.73	864.57	36.12	22.73	38.05	11.27	19.01	858	1,151
	Vicksburg	Red R. Waterway (5 L&D)	6	0.00	98.96	98.96	3.57	2.34	3.88	1.21	2.05	78	105
		Bayou Bodcau Reservoir	17	0.10	63.30	63.40	2.44	1.60	2.65	0.83	1.40	53	71
		Ouach.-Black R's. (4 L&D, Clmbia. Pool)	39	0.00	123.36	123.36	5.32	3.49	5.79	1.81	3.05	116	156
		Ouach.-Black R's. (4 L&D, J'ville Pool)	22	0.00	142.40	142.40	5.62	3.69	6.11	1.91	3.23	123	165
		# Arkabutla Lake	29	19.03	459.67	478.70	19.88	12.79	19.17	6.89	10.16	404	524
		!# Ouachita	26	60.05	467.55	527.60	22.10	13.95	25.07	7.39	13.43	515	737
		Caddo Lake	1	0.00	12.16	12.16	0.43	0.28	0.46	0.14	0.24	9	12
		# Degray Lake	25	47.09	409.84	456.93	18.98	11.87	18.96	5.85	9.49	449	593
		Enid Lake	28	22.86	235.60	258.46	10.85	7.12	11.79	3.69	6.22	237	318
		# Grenada Lake	25	3.24	732.39	735.62	29.57	18.20	26.20	8.52	12.51	667	818
		Lake Greeson	23	24.82	161.87	186.69	7.75	5.08	8.42	2.64	4.45	169	227
		Pearl R. (3 L's. and Dams)	20	0.00	119.87	119.87	4.68	3.07	5.09	1.59	2.69	102	137
		# Sardis Lake	34	2.68	490.13	492.81	20.77	13.05	19.49	6.12	9.38	493	612
		Wallace Lake	0	0.00	7.68	7.68	0.27	0.18	0.29	0.09	0.15	6	8

Note: ! = Projects where survey data were used to create the spending profiles (Propst et al. 1992).
# = Projects where the IMPLAN economic impact models have been built (Becker 1997). (References cited in this appendix are listed in the References at the end of the main text.)
LMVD = Lower Mississippi Valley; MRD = Missouri River; NED = New England; NAD = North Atlantic; NCD = North Central; NPD = North Pacific; ORD = Ohio River; SAD = South Atlantic; SPD = South Pacific; SWD = Southwestern.
[1] Percentage of boating participants.
[2] In millions.
[3] Number of jobs.
[4] Including other overnight visits.

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
LMVD (cont.)	Vicksburg (cont.)	Ouach.-Black R's. (4 L&D, Calion Pool)	20	0.00	45.77	45.77	1.79	1.17	1.94	0.61	1.03	39	52
		Ouach.-Black R's. (4 L&D, Felsthl. Pool)	66	11.39	69.94	81.33	4.12	2.70	4.48	1.40	2.36	90	121
MRD	Kansas City	Clinton Lake	18	26.68	296.56	323.24	12.86	8.43	13.97	4.37	7.38	281	377
		Harlan County Lake	26	10.62	169.91	180.53	7.43	4.87	8.07	2.53	4.26	162	218
		Hillsdale Lake	42	14.56	51.68	66.24	3.09	2.02	3.35	1.05	1.77	67	91
		Kanopolis Lake	17	12.84	59.60	72.44	2.96	1.94	3.22	1.01	1.70	65	87
		# Harry S. Truman	62	51.77	627.85	679.63	33.35	20.88	36.10	9.79	17.44	806	1,081
		Long Branch Lake	17	2.67	106.49	109.16	4.23	2.78	4.60	1.44	2.43	92	124
		Melvern Lake	24	30.31	97.43	127.74	5.51	3.62	5.99	1.87	3.16	120	162
		!# Milford	22	22.31	172.24	194.55	7.99	5.03	8.49	2.23	4.00	202	268
		Perry Lake	33	22.70	277.14	299.84	12.85	8.43	13.96	4.37	7.37	280	377
		# Pomme de Terre	45	34.47	466.94	501.41	22.73	13.73	24.23	5.92	11.34	644	851
		Pomona Lake	29	19.44	143.62	163.06	6.94	4.56	7.55	2.36	3.98	152	204
		# Rathbun Lake	16	27.45	192.97	220.42	8.81	5.38	9.38	2.69	4.81	205	279
		# Smithville Lake	36	57.50	320.49	378.00	16.82	11.19	21.86	6.09	12.00	368	546
		# Stockton Lake	33	28.30	420.55	448.85	19.16	13.35	25.13	7.18	13.42	440	645
		Tuttle Creek Lake	7	2.46	256.50	258.96	9.43	6.19	10.25	3.21	5.41	206	277
		Wilson Lake	29	12.07	62.54	74.60	3.22	2.11	3.50	1.09	1.85	70	94
		Longview Lake	11	8.01	329.81	337.82	12.66	8.30	13.76	4.30	7.26	276	371
		Blue Springs Lake	10	5.67	439.77	445.44	16.53	10.84	17.96	5.62	9.48	361	485
	Omaha	Wehrspann Lake	5	0.00	102.96	102.96	3.69	2.42	4.01	1.26	2.12	81	108
		Snyder-Winnebago	40	3.02	24.21	27.23	1.22	0.80	1.33	0.41	0.70	27	36
		# Sharpe	19	20.72	398.84	419.56	16.59	10.22	18.12	5.08	9.40	399	551
		Bowman Haley Lake	14	0.53	8.94	9.47	0.37	0.24	0.40	0.12	0.21	8	11
		# Chatfield Lake	6	10.20	588.66	598.86	21.75	15.36	26.71	8.35	14.93	396	574
		# Cherry Creek	6	6.80	802.49	809.28	29.29	20.68	35.97	11.25	20.10	533	773
		Cottonwood Springs Lake	0	0.52	3.70	4.22	0.15	0.10	0.17	0.05	0.09	3	5
		Cold Brook Lake	0	0.26	16.89	17.15	0.60	0.39	0.65	0.20	0.34	13	18
		Fort Peck Project	43	7.53	96.47	104.00	4.67	3.07	5.08	1.59	2.68	102	137

(Sheet 2 of 17)

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
MRD (cont.)	Omaha (cont.)	Ft. Randall Dam Lk. Francis Case	24	36.06	530.96	567.02	23.13	15.17	25.13	7.86	13.27	505	678
		Garrison Dam Lk. Sakakawea	40	40.16	325.66	365.81	16.38	10.75	17.80	5.57	9.40	357	480
		# Lewis and Clark	11	92.32	562.68	655.00	25.64	16.26	22.33	7.91	10.70	657	791
		!# Oahe	29	49.14	696.96	746.11	31.25	24.24	45.34	11.40	22.53	795	1,179
		Pipestem Lake	7	1.07	22.02	23.08	0.85	0.56	0.93	0.29	0.49	19	25
		Standing Bear Lake	11	0.00	47.79	47.79	1.77	1.16	1.93	0.60	1.02	39	52
		Olive Creek Lake	14	3.34	2.26	5.60	0.26	0.17	0.28	0.09	0.15	6	8
		Bluestem Lake	28	1.27	6.41	7.68	0.33	0.22	0.36	0.11	0.19	7	10
		Wagontrain Lake	21	4.68	2.90	7.57	0.36	0.24	0.39	0.12	0.21	8	11
		Stagecoach Lake	13	3.34	2.15	5.49	0.25	0.17	0.28	0.09	0.15	6	7
		Site 10 Yankee Hill Lk. Saltcr. Trib.	15	0.13	7.59	7.72	0.30	0.19	0.32	0.10	0.17	6	9
		Conestoga Lake	32	2.01	12.02	14.03	0.61	0.40	0.66	0.21	0.35	13	18
		Twin Lakes	18	0.00	6.12	6.12	0.24	0.16	0.26	0.08	0.14	5	7
		Pawnee Lake	35	8.78	44.34	53.12	2.36	1.55	2.57	0.80	1.35	52	69
		Holmes Lake	4	0.00	159.54	159.54	5.69	3.73	6.18	1.93	3.26	124	167
		Branched Oak Lake	32	13.26	80.34	93.60	4.07	2.67	4.43	1.38	2.34	89	119
		Glenn Cunningham Lake	11	4.00	69.31	73.31	2.78	1.82	3.02	0.95	1.59	61	82
		Bear Creek Lake	2	4.06	96.77	100.83	3.61	2.37	3.92	1.23	2.07	79	106
		Zorinsky Lake	11	0.00	130.59	130.59	4.85	3.18	5.27	1.65	2.78	106	142
NED	New England	Black Rock Lake	1	0.00	26.75	26.75	0.94	0.61	1.02	0.32	0.54	20	27
		Cape Cod Canal	8	39.34	1,742.37	1,781.71	65.60	43.03	71.28	22.31	37.63	1,431	1,924
		Ball Mountain Lake	0	4.00	20.94	24.94	0.93	0.61	1.01	0.32	0.53	20	27
		Barre Falls Dam	1	0.00	25.76	25.76	0.90	0.59	0.98	0.31	0.52	20	26
		Birch Hill Dam	5	10.13	143.87	153.99	5.67	3.72	6.16	1.93	3.25	124	166
		Blackwater Dam	4	0.00	9.67	9.67	0.34	0.23	0.37	0.12	0.20	8	10
		Buffumville Lake	9	0.00	45.13	45.13	1.66	1.09	1.80	0.56	0.95	36	49
		Colebrook R. Lake	15	0.00	57.48	57.48	2.18	1.43	2.37	0.74	1.25	48	64
		Conant Brook Dam	0	0.00	7.94	7.94	0.28	0.18	0.30	0.09	0.16	6	8

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
NED (cont.)	New England (cont.)	East Brimfield Lake	12	0.00	40.01	40.01	1.49	0.98	1.62	0.51	0.86	33	44
		Edward MacDowell Lake	6	0.00	14.03	14.03	0.51	0.33	0.55	0.17	0.29	11	15
		Franklin Falls Dam	5	0.00	15.01	15.01	0.54	0.35	0.59	0.18	0.31	12	16
		Hancock Brook Lake	1	0.00	2.98	2.98	0.10	0.07	0.11	0.04	0.06	2	3
		Hodges Village Dam	2	0.00	22.20	22.20	0.78	0.51	0.85	0.27	0.45	17	23
		Hop Brook Lake	7	0.00	73.83	73.83	2.68	1.76	2.91	0.91	1.54	58	79
		Hopkinton-Everett Lake	5	0.00	137.09	137.09	4.92	3.22	5.34	1.67	2.82	107	144
		Knightville Dam	3	0.63	11.72	12.36	0.45	0.29	0.49	0.15	0.26	10	13
		Littleville Lake	16	0.00	19.98	19.98	0.76	0.50	0.83	0.26	0.44	17	22
		Mansfield Hollow Lake	25	0.00	156.82	156.82	6.29	4.13	6.84	2.14	3.61	137	185
		North Hartland Lake	0	3.53	36.33	39.86	1.44	0.94	1.56	0.49	0.83	31	42
		North Springfield Lake	0	0.00	9.65	9.65	0.34	0.22	0.36	0.11	0.19	7	10
		Northfield Brook Lake	0	0.00	15.88	15.88	0.55	0.36	0.60	0.19	0.32	12	16
		Otter Brook Lake	0	0.00	25.49	25.49	0.89	0.58	0.96	0.30	0.51	19	26
		Surry Mountain Lake	0	0.00	27.56	27.56	0.96	0.63	1.04	0.33	0.55	21	28
		Thomaston Dam	0	0.00	40.49	40.49	1.41	0.92	1.53	0.48	0.81	31	41
		Townshend Lake	0	0.00	13.22	13.22	0.46	0.30	0.50	0.16	0.26	10	13
		Tully Lake	4	0.00	4.07	4.07	0.14	0.10	0.16	0.05	0.08	3	4
		Union Village Dam	0	0.00	15.91	15.91	0.55	0.36	0.60	0.19	0.32	12	16
		West Hill Dam	2	0.00	22.78	22.78	0.80	0.53	0.87	0.27	0.46	18	24
		West Thompson Lake	24	1.44	26.83	28.27	1.15	0.75	1.25	0.39	0.66	25	34
		Westville Lake	3	0.00	19.46	19.46	0.69	0.45	0.75	0.23	0.40	15	20
		Charles R. Nat. Valley Storage Proj.	24	0.00	8.82	8.82	0.35	0.23	0.38	0.12	0.20	8	10
NAD	Baltimore	Almond Lake	5	4.66	60.28	64.94	2.40	1.57	2.60	0.81	1.37	52	70
		Aylesworth Creek Lake	0	0.00	1.82	1.82	0.06	0.04	0.07	0.02	0.04	1	2
		Jennings Randolph Lake	23	1.85	17.37	19.22	0.79	0.52	0.86	0.27	0.45	17	23
		Cowanesque Lake	31	8.45	26.84	35.29	1.57	1.03	1.71	0.54	0.90	34	46
		Curwensville Lake	33	2.95	5.68	8.62	0.40	0.26	0.43	0.14	0.23	9	12
		East Sidney Lake	32	5.36	2.88	8.23	0.41	0.27	0.45	0.14	0.24	9	12

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
NAD (cont.)	Baltimore (cont.)	!# Raystown	27	39.61	306.01	345.62	14.55	9.19	15.16	4.96	8.13	345	450
		Foster Joseph Sayers Dam	32	11.45	159.37	170.82	7.27	4.77	7.89	2.47	4.17	159	213
		Whitney Point	32	6.30	25.02	31.31	1.39	0.91	1.51	0.47	0.80	30	41
		Alvin R. Bush - Kettle Creek	33	4.76	21.82	26.58	1.18	0.77	1.28	0.40	0.67	26	34
		Tioga-Hammond Lakes	5	10.58	50.85	61.43	2.36	1.55	2.56	0.80	1.35	51	69
	Norfolk	Gathright Dam - Lake Moomaw	0	0.00	15.91	15.91	0.55	0.36	0.60	0.19	0.32	12	16
		AIW Albmrl & Ches & Dismal Swamp Cnl.	10	0.00	102.68	102.68	3.79	2.49	4.12	1.29	2.18	83	111
	Philadelphia	Beltzville Lake	35	0.00	169.36	169.36	7.16	4.70	7.78	2.44	4.11	156	210
		# Blue Marsh Lake	24	0.00	206.39	206.39	8.24	5.39	9.11	3.06	5.06	172	229
		IWW D'ware R. To Chesap. Bay C+D Cnl.	65	0.00	79.10	79.10	3.86	2.53	4.20	1.31	2.22	84	113
		Prompton Lake	80	0.00	16.37	16.37	0.85	0.56	0.93	0.29	0.49	19	25
		Francis E. Walter Dam	50	0.00	223.10	223.10	10.16	6.67	11.04	3.46	5.83	222	298
NCD	Detroit	Duluth-Superior Harbor	0	0.00	410.65	410.65	14.29	9.37	15.53	4.86	8.20	312	419
		Keweenaw Waterway	10	0.00	78.80	78.80	2.91	1.91	3.16	0.99	1.67	63	85
		Sturgeon Bay & Lk. Michigan Ship Cnl.	0	0.00	5.05	5.05	0.18	0.12	0.19	0.06	0.10	4	5
		St. Marys River	0	0.00	227.56	227.56	7.92	5.20	8.61	2.69	4.54	173	232
	Rock Island	Coralville Lake	32	47.80	345.97	393.77	17.03	11.17	18.50	5.79	9.77	372	499
		Illinois Waterway	0	0.00	37.02	37.02	1.29	0.85	1.40	0.44	0.74	28	38
		Mississippi R. Pools 11-22 (10 L&D)	13	51.11	5,187.90	5,239.01	197.54	129.57	214.63	67.17	113.32	4,311	5,793
		Lake Red Rock	10	65.05	278.34	343.39	13.61	8.93	14.79	4.63	7.81	297	399
		# Saylorville Lake	17	42.03	430.23	472.26	18.73	12.57	25.00	6.91	13.92	418	626
		Farmdale Dam	0	0.00	5.37	5.37	0.19	0.12	0.20	0.06	0.11	4	5
	St. Paul	Eau Galle Flood Control Project	3	1.57	58.49	60.06	2.15	1.41	2.34	0.73	1.23	47	63
		Homme Lake	60	0.00	12.22	12.22	0.58	0.38	0.63	0.20	0.33	13	17
		Lac Qui Parle Lake	3	1.27	38.22	39.48	1.42	0.93	1.54	0.48	0.81	31	42
		Baldhill Dam Lake Ashtabula	38	3.49	38.16	41.65	1.83	1.20	1.99	0.62	1.05	40	54
		Lake Traverse	24	0.00	54.46	54.46	2.17	1.43	2.36	0.74	1.25	47	64
		Mississippi R. Pool No. 3	60	0.00	345.99	345.99	16.52	10.84	17.95	5.62	9.48	361	484

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
NCD (cont.)	St. Paul (cont.)	Mississippi R. Pool No. 4	75	1.42	458.55	459.96	23.50	15.42	25.54	7.99	13.48	513	689
		Mississippi R. Pool No. 5	70	6.74	128.50	135.24	6.83	4.48	7.42	2.32	3.92	149	200
		Mississippi R. Pool No. 6	70	0.00	158.96	158.96	7.94	5.21	8.63	2.70	4.56	173	233
		Mississippi R. Pool No. 8	65	30.99	346.17	377.16	18.78	12.32	20.40	6.38	10.77	410	551
		Mississippi R. Pool No. 9	65	5.66	240.74	246.39	12.10	7.94	13.15	4.11	6.94	264	355
		Mississippi R. Pool No. 10	70	0.00	327.61	327.61	16.37	10.73	17.78	5.56	9.39	357	480
		Mississippi R. Pool No. 5A	65	0.00	122.66	122.66	5.99	3.93	6.51	2.04	3.44	131	176
		Orwell Lake	20	0.00	8.10	8.10	0.32	0.21	0.34	0.11	0.18	7	9
		Miss. R. Headwaters Lakes Proj.	37	34.63	656.16	690.78	29.96	19.65	32.56	10.19	17.19	654	879
		Mississippi R. Pool No. 1	20	0.00	52.57	52.57	2.05	1.35	2.23	0.70	1.18	45	60
		Mississippi R. Pool No. 2	50	0.00	231.37	231.37	10.54	6.91	11.45	3.58	6.05	230	309
		Mississippi R. Pool No. 7	65	0.00	200.77	200.77	9.81	6.43	10.66	3.33	5.63	214	288
		Miss. R. Pool U+L St. Anthony Falls	30	0.00	20.63	20.63	0.85	0.56	0.92	0.29	0.49	19	25
NPD	Alaska	Chena R. Lakes	6	5.60	47.34	52.94	1.99	1.31	2.16	0.68	1.14	43	58
	Portland	Blue R. Lake	20	0.00	18.67	18.67	0.73	0.48	0.79	0.25	0.42	16	21
		Cottage Grove Lake	65	9.78	195.01	204.80	10.12	6.64	10.99	3.44	5.80	221	297
		Cougar Lake	14	0.00	25.45	25.45	0.96	0.63	1.04	0.33	0.55	21	28
		# Lake Celilo	27	4.15	406.52	410.67	16.72	10.37	16.27	5.89	9.17	379	490
		Detroit Lake	0	0.00	8.67	8.67	0.30	0.20	0.33	0.10	0.17	7	9
		Dorena Lake	22	9.16	152.65	161.81	6.52	4.27	7.08	2.22	3.74	142	191
		Fern Ridge Lake	17	3.67	304.65	308.32	11.90	7.80	12.93	4.05	6.82	260	349
		Green Peter Lake	13	2.47	138.64	141.10	5.34	3.50	5.80	1.81	3.06	116	156
		Hills Creek	4	0.00	7.09	7.09	0.25	0.17	0.27	0.09	0.15	6	7
		Fall Creek Lake	53	2.82	87.93	90.75	4.23	2.77	4.59	1.44	2.43	92	124
		# Lake Umatilla	35	16.11	778.04	794.15	33.80	18.81	25.83	8.61	12.33	733	869
		Lost Creek Lake	36	13.47	193.55	207.02	8.98	5.89	9.75	3.05	5.15	196	263
		Willamette Falls Locks	56	0.00	11.04	11.04	0.52	0.34	0.56	0.18	0.30	11	15
		Foster Lake	14	4.34	281.25	285.59	10.85	7.12	11.79	3.69	6.22	237	318

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
NPD (cont.)	Portland (cont.)	Willow Creek	30	0.00	16.74	16.74	0.69	0.45	0.75	0.23	0.40	15	20
		Lookout Point Lake	18	0.00	43.96	43.96	1.70	1.11	1.85	0.58	0.97	37	50
		# Bonneville	9	1.53	1,322.41	1,323.95	48.63	34.42	59.11	20.17	34.34	1,031	1,419
		Dexter Lake	65	0.00	123.63	123.63	6.04	3.96	6.56	2.05	3.46	132	177
	Seattle	Albeni Falls Dam & Lake Pend Oreille	17	14.62	100.46	115.08	4.63	3.03	5.03	1.57	2.65	101	136
		Lake Washington Ship Canal	8	0.00	507.89	507.89	18.54	12.16	20.14	6.30	10.63	405	544
		Libby Dam and Lake Koocanusa	40	1.41	90.81	92.22	4.02	2.64	4.37	1.37	2.31	88	118
		Mud Mtn. Dam Project White R.	0	0.00	48.03	48.03	1.67	1.10	1.82	0.57	0.96	36	49
		Keystone Harbor	25	2.34	36.40	38.74	1.59	1.04	1.72	0.54	0.91	35	47
		Chief Joseph Dam & Rufus Woods Lake	7	2.27	72.64	74.90	2.75	1.80	2.99	0.94	1.58	60	81
	Walla Walla	Ice Harbor L & D, Lake Sacajawea	17	17.27	165.03	182.29	7.24	4.75	7.87	2.46	4.16	158	212
		!# Dworshak	35	2.78	41.89	44.66	1.93	1.11	1.52	0.58	0.81	44	54
		Little Goose L & D, Lake Bryan	26	5.69	97.89	103.57	4.26	2.79	4.62	1.45	2.44	93	125
		# Lower Granite	23	13.84	367.51	381.35	15.33	9.51	16.28	4.70	8.42	389	526
		Lower Monumental L & D, Lake West	18	8.42	60.69	69.10	2.79	1.83	3.03	0.95	1.60	61	82
		Lucky Peak Lake	30	0.00	286.74	286.74	11.82	7.75	12.84	4.02	6.78	258	347
		!# McNary	9	10.45	1,556.95	1,567.40	57.70	35.48	56.86	18.25	29.76	1,252	1,644
		Mill Creek Lake	5	0.00	59.66	59.66	2.14	1.40	2.32	0.73	1.23	47	63
ORD	Huntington	# Alum Creek Lake	8	19.80	910.44	930.24	34.24	22.67	37.59	13.27	21.43	680	904
		Winfield L & D <Kanawha R.>	20	0.00	72.80	72.80	2.84	1.87	3.09	0.97	1.63	62	83
		Marmet Locks & Dam <Kanawha R.>	0	0.00	19.01	19.01	0.66	0.43	0.72	0.22	0.38	14	19
		London Locks & Dam <Kanawha R.>	0	0.00	1.82	1.82	0.06	0.04	0.07	0.02	0.04	1	2
		Beech Fork Lake	17	18.37	252.98	271.35	10.68	7.01	11.61	3.63	6.13	233	313
		Belleville L's. And Dam <Ohio R.>	30	0.00	205.91	205.91	8.49	5.57	9.22	2.89	4.87	185	249
		# Bluestone Lake	5	40.45	434.80	475.25	17.63	11.15	20.21	5.69	10.51	387	548
		Burnsville Lake	9	22.91	120.09	143.00	5.58	3.66	6.06	1.90	3.20	122	164
		Cpt Anthony Meldahl L's. & D <Ohio R.>	20	0.00	154.86	154.86	6.05	3.97	6.57	2.06	3.47	132	177
		# Deer Creek Lake	4	15.66	556.71	572.37	20.63	13.58	21.98	8.03	12.69	403	530

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
ORD (cont.)	Huntington (cont.)	Delaware Lake	6	14.26	265.95	280.21	10.32	6.77	11.21	3.51	5.92	225	303
		Dewey Lake	1	0.53	305.71	306.24	10.73	7.04	11.66	3.65	6.16	234	315
		Dillon Lake	1	12.98	503.83	516.81	18.29	11.99	19.87	6.22	10.49	399	536
		East Lynn Lake	11	8.62	108.02	116.63	4.45	2.92	4.84	1.51	2.56	97	131
		Fishtrap Lake	5	0.45	243.95	244.41	8.77	5.75	9.53	2.98	5.03	191	257
		Robert C. Byrd Locks & Dam <Ohio R.>	10	0.00	15.90	15.90	0.59	0.39	0.64	0.20	0.34	13	17
		Grayson Lake	7	4.73	246.19	250.92	9.17	6.02	9.97	3.12	5.26	200	269
		Greenup L's. And Dam <Ohio R.>	20	0.00	278.35	278.35	10.87	7.13	11.81	3.70	6.24	237	319
		John W. Flannagan Dam & Reservoir	4	1.77	122.42	124.19	4.45	2.92	4.84	1.51	2.55	97	131
		North Branch Kokosing R. Lake	6	0.77	105.60	106.37	3.85	2.52	4.18	1.31	2.21	84	113
		North Fork of Pound R. Lake	0	0.00	61.46	61.46	2.14	1.40	2.32	0.73	1.23	47	63
		Paint Creek Lake	3	13.26	239.00	252.26	9.13	5.99	9.92	3.11	5.24	199	268
		Paintsville Lake	13	0.00	260.97	260.97	9.80	6.43	10.65	3.33	5.62	214	288
		R. D. Bailey Lake	4	2.20	64.63	66.83	2.41	1.58	2.62	0.82	1.39	53	71
		Racine L's. And Dam <Ohio R.>	20	0.00	35.71	35.71	1.40	0.92	1.52	0.47	0.80	30	41
		# Summersville	15	15.20	371.70	386.90	14.91	9.02	14.37	4.54	7.52	337	451
		Sutton Lake	4	11.64	351.58	363.22	13.12	8.60	14.25	4.46	7.53	286	385
		Tom Jankins Dam and Burr Oak Lake	3	7.53	128.81	136.34	4.94	3.24	5.37	1.68	2.83	108	145
		Willow Island Locks & Dam <Ohio R.>	20	0.00	86.80	86.80	3.39	2.22	3.68	1.15	1.95	74	99
		Wills Creek Lake	3	0.00	11.29	11.29	0.40	0.26	0.43	0.14	0.23	9	12
		Yatesville Lake	30	0.00	221.82	221.82	9.14	6.00	9.93	3.11	5.24	199	268
		Mohawk Dam	12	0.39	93.30	93.70	3.51	2.30	3.81	1.19	2.01	76	103
		Atwood Lake	9	37.94	464.91	502.86	19.01	12.47	20.65	6.46	10.90	415	557
		Bolivar Dam	0	0.00	55.73	55.73	1.94	1.27	2.11	0.66	1.11	42	57
		Charles Mill Lake	2	35.10	208.69	243.79	9.10	5.97	9.89	3.09	5.22	199	267
		Clendening Lake	16	0.00	68.10	68.10	2.60	1.71	2.83	0.88	1.49	57	76
		Dover Dam	1	0.00	73.11	73.11	2.56	1.68	2.78	0.87	1.47	56	75
		Mohicanville Dam	0	0.00	4.15	4.15	0.14	0.09	0.16	0.05	0.08	3	4

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
ORD (cont.)	Huntington (cont.)	Piedmont Lake	21	0.00	68.33	68.33	2.68	1.76	2.92	0.91	1.54	59	79
		Pleasant Hill Lake	1	36.42	217.29	253.71	9.42	6.18	10.23	3.20	5.40	206	276
		# Senecaville Lake	8	34.67	353.11	387.78	14.65	9.73	15.43	5.15	8.05	337	440
		Tappan Lake	17	30.72	262.38	293.10	11.69	7.67	12.70	3.97	6.71	255	343
		Beach City Lake	1	0.00	99.68	99.68	3.49	2.29	3.79	1.19	2.00	76	102
		Leesville Lake	19	5.88	45.11	50.99	2.06	1.35	2.24	0.70	1.18	45	60
	Louisville	# Barren R. Lake	13	27.10	509.76	536.86	20.55	13.07	21.93	6.63	11.24	477	649
		Brookville Lake	17	29.52	403.83	433.35	17.06	11.19	18.54	5.80	9.79	372	500
		Buckhorn Lake	14	1.64	118.54	120.18	4.56	2.99	4.96	1.55	2.62	100	134
		Caesar Creek Lake	8	20.80	335.93	356.73	13.32	8.74	14.47	4.53	7.64	291	391
		Cagles Mill Lake	5	28.25	116.41	144.66	5.60	3.67	6.08	1.90	3.21	122	164
		Cannelton L & D + Ohio R.	6	0.00	23.70	23.70	0.85	0.56	0.93	0.29	0.49	19	25
		Carr Creek Lake	37	1.96	219.06	221.02	9.47	6.21	10.29	3.22	5.43	207	278
		Cave Run Lake	2	0.00	181.91	181.91	6.41	4.20	6.96	2.18	3.68	140	188
		Clarence J. Brown Dam & Reservoir	91	6.84	366.55	373.39	20.47	13.43	22.24	6.96	11.74	447	600
		# William H. Harsha	18	27.79	523.66	551.44	21.69	14.76	26.34	8.64	15.18	427	605
		Green R. Lake	10	15.68	298.57	314.25	11.83	7.76	12.85	4.02	6.79	258	347
		J. Edward Roush Lake	4	8.66	114.60	123.26	4.52	2.96	4.91	1.54	2.59	99	133
		Kentucky R. + 4 Locks	7	0.00	27.50	27.50	1.00	0.65	1.08	0.34	0.57	22	29
		# Cecil M. Harden	16	20.43	419.60	440.03	17.10	11.00	17.46	5.77	9.25	409	530
		Markland L & D + Ohio R.	22	0.67	116.75	117.42	4.65	3.05	5.05	1.58	2.67	101	136
		McAlpine L & D + Ohio R.	6	0.00	94.53	94.53	3.41	2.24	3.71	1.16	1.96	74	100
		Mississinewa Lake	7	49.00	209.30	258.30	10.08	6.61	10.95	3.43	5.78	220	296
		# Monroe Lake	18	40.68	444.62	485.30	19.31	11.94	18.72	6.20	9.78	425	550
		Newburgh L & D + Ohio R.	8	0.00	175.28	175.28	6.40	4.20	6.95	2.18	3.67	140	188
		# Nolin R. Lake	20	17.23	795.26	812.49	31.98	20.28	32.44	10.19	16.48	757	991
		Patoka Lake	10	37.48	355.55	393.04	15.05	9.87	16.35	5.12	8.63	328	441
		# Rough R. Lake	15	27.13	794.67	821.81	31.60	19.51	30.34	9.45	15.08	767	970

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
ORD (cont.)	Louisville (cont.)	Salamonie Lake	7	41.66	178.73	220.39	8.60	5.64	9.34	2.92	4.93	188	252
		Smithland L & D + Ohio R.	8	0.00	16.13	16.13	0.59	0.39	0.64	0.20	0.34	13	17
		Taylorsville Lake	19	0.00	230.63	230.63	8.96	5.88	9.74	3.05	5.14	196	263
		John T. Myers L & D	4	0.00	70.44	70.44	2.51	1.65	2.73	0.85	1.44	55	74
		West Fork of Mill Creek Lake	1	6.39	218.61	225.01	7.97	5.23	8.66	2.71	4.57	174	234
		Green R. + 2 Locks	6	0.00	10.98	10.98	0.40	0.26	0.43	0.13	0.23	9	12
		L & D 52 + Ohio R.	5	0.00	13.12	13.12	0.47	0.31	0.51	0.16	0.27	10	14
		L & D 53 + Ohio R.	7	0.00	2.87	2.87	0.10	0.07	0.11	0.04	0.06	2	3
	Nashville	# Barkley	16	46.00	1,501.42	1,547.42	59.77	39.12	69.89	19.27	35.94	1,368	1,926
		# Center Hill	8	30.02	1,359.11	1,389.13	51.14	31.26	49.82	15.34	24.91	1,016	1,352
		# Cheatham	20	6.18	832.03	838.21	32.83	22.53	40.97	12.27	22.49	614	900
		# Cordell Hull	11	22.62	1,286.45	1,309.07	48.94	29.84	47.35	14.93	24.05	964	1,283
		# Dale Hollow	36	58.80	1,038.83	1,097.63	47.43	30.25	46.00	14.70	22.68	1,040	1,338
		!# J. Percy Priest	15	22.24	2,268.16	2,290.41	87.33	60.29	113.27	32.69	61.77	1,649	2,471
		# Laurel R.	8	0.00	112.41	112.41	4.10	2.95	4.80	1.44	2.41	99	135
		Martins Fork Lake	17	0.00	55.88	55.88	2.15	1.41	2.33	0.73	1.23	47	63
		Old Hickory L & D	24	55.57	4,194.58	4,250.14	170.43	111.79	185.18	57.95	97.77	3,719	4,998
		!# Cumberland	53	65.91	1,714.24	1,780.15	83.06	56.63	89.45	26.64	42.54	1,958	2,635
	Pittsburgh	Berlin Lake	40	16.54	121.03	137.57	6.18	4.05	6.71	2.10	3.54	135	181
		Conemaugh R. Lake	8	0.00	15.65	15.65	0.57	0.37	0.62	0.19	0.33	12	17
		Crooked Creek Lake	17	1.46	123.25	124.71	4.81	3.16	5.23	1.64	2.76	105	141
		East Branch Clarion R. Lake	24	0.51	93.95	94.46	3.78	2.48	4.10	1.28	2.17	82	111
		Hannibal L's. And Dam <Ohio R.>	65	0.00	6.81	6.81	0.33	0.22	0.36	0.11	0.19	7	10
		Kinzua Dam & Allegheny Reservoir	22	6.68	138.37	145.05	5.82	3.82	6.32	1.98	3.34	127	171
		Loyalhanna Lake	9	1.07	71.45	72.53	2.68	1.76	2.91	0.91	1.54	58	79
		Mahoning Creek Lake	17	3.47	11.00	14.47	0.60	0.40	0.66	0.21	0.35	13	18
		Maxwell L's. & Dam <Monongahela R.>	60	0.00	2.04	2.04	0.10	0.06	0.11	0.03	0.06	2	3
		Mosquito Creek Lake	20	15.64	415.97	431.61	17.08	11.20	18.55	5.81	9.80	373	501

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
ORD (cont.)	Pittsburgh (cont.)	New Cumberland L's. & Dam <Ohio R.>	50	0.00	12.40	12.40	0.56	0.37	0.61	0.19	0.32	12	17
		Opekiska L & D <Monongahela R.>	50	0.00	0.36	0.36	0.02	0.01	0.02	0.01	0.01	0	0
		Pike Island L's. And Dam <Ohio R.>	40	0.00	7.55	7.55	0.33	0.21	0.36	0.11	0.19	7	10
		# Shenango R.	22	28.29	228.70	256.98	10.54	7.02	13.00	3.61	6.86	254	355
		Stonewall Jackson Lake	35	2.28	133.36	135.64	5.77	3.78	6.27	1.96	3.31	126	169
		Tionesta Lake	10	9.67	189.04	198.71	7.48	4.90	8.12	2.54	4.29	163	219
		Tygart Lake	20	4.94	155.18	160.12	6.32	4.15	6.87	2.15	3.63	138	185
		Union City Dam	0	0.00	27.05	27.05	0.94	0.62	1.02	0.32	0.54	21	28
		Michael J. Kirwan Dam & Reservoir	24	6.89	76.25	83.14	3.41	2.24	3.71	1.16	1.96	74	100
		Woodcock Creek Lake	2	7.39	119.09	126.48	4.56	2.99	4.96	1.55	2.62	100	134
		Youghiogheny R. Lake	15	9.44	202.04	211.47	8.17	5.36	8.87	2.78	4.68	178	240
		Montgomery Locks & Dam <Ohio R.>	65	0.00	6.28	6.28	0.31	0.20	0.33	0.10	0.18	7	9
		Dashields Locks & Dam <Ohio R.>	65	0.00	6.31	6.31	0.31	0.20	0.34	0.10	0.18	7	9
		Emsworth L's. And Dams <Ohio R.>	40	0.00	25.56	25.56	1.11	0.73	1.20	0.38	0.64	24	33
		L & D 2 <Allegheny R.>	70	0.00	12.46	12.46	0.62	0.41	0.68	0.21	0.36	14	18
		L & D 3 <Allegheny R.>	65	0.00	3.60	3.60	0.18	0.12	0.19	0.06	0.10	4	5
		L & D 4 <Allegheny R.>	65	0.00	3.39	3.39	0.17	0.11	0.18	0.06	0.09	4	5
		L & D 5 <Allegheny R.>	65	0.00	2.35	2.35	0.11	0.08	0.12	0.04	0.07	3	3
		L & D 6 <Allegheny R.>	60	0.00	1.89	1.89	0.09	0.06	0.10	0.03	0.05	2	3
		L & D 7 <Allegheny R.>	55	0.00	2.04	2.04	0.10	0.06	0.10	0.03	0.05	2	3
		L & D 8 <Allegheny R.>	65	0.00	2.64	2.64	0.13	0.08	0.14	0.04	0.07	3	4
		L & D 9 <Allegheny R.>	60	0.00	2.50	2.50	0.12	0.08	0.13	0.04	0.07	3	4
		L's. And Dam 2 <Monongahela R.>	70	0.00	2.88	2.88	0.14	0.09	0.16	0.05	0.08	3	4
		L's. And Dam 3 <Monongahela R.>	65	0.00	1.46	1.46	0.07	0.05	0.08	0.02	0.04	2	2
		L's. And Dam 4 <Monongahela R.>	65	0.00	1.11	1.11	0.05	0.04	0.06	0.02	0.03	1	2
		Gray's Landing L's. And Dam	65	0.00	0.71	0.71	0.03	0.02	0.04	0.01	0.02	1	1
		Point Marion L & D <Monongahela R.>	60	0.00	0.36	0.36	0.02	0.01	0.02	0.01	0.01	0	1
		Morgantown L & D <Monongahela R.>	50	0.00	0.54	0.54	0.02	0.02	0.03	0.01	0.01	1	1
		Hildebrand L & D <Monongahela R.>	75	0.00	0.18	0.18	0.01	0.01	0.01	0.00	0.01	0	0

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
SAD	Jackson	Four R. Basins	20	0.00	78.77	78.77	3.08	2.02	3.34	1.05	1.77	67	90
		Lake Okeechobee and Waterway	23	191.89	2,297.62	2,489.51	101.47	66.56	110.25	34.50	58.21	2,214	2,976
		Fernandina Harbor	0	0.00	20.90	20.90	0.73	0.48	0.79	0.25	0.42	16	21
		Miami Harbor	0	0.00	15.46	15.46	0.54	0.35	0.58	0.18	0.31	12	16
	Mobile	# Allatoona Lake	33	129.33	2,051.84	2,181.18	93.01	62.55	97.54	36.62	56.80	1,636	2,138
		Tennessee-Tombigbee Waterway	30	65.70	641.23	706.93	30.01	19.68	32.61	10.20	17.21	655	880
		!# Sidney Lanier	33	123.79	2,517.35	2,641.14	112.19	74.98	130.56	43.16	74.57	2,054	2,913
		Carters Lake	38	8.99	174.40	183.40	7.99	5.24	8.68	2.72	4.58	174	234
		Alabama R. Lakes Claiborne	34	4.44	71.18	75.62	3.24	2.13	3.52	1.10	1.86	71	95
		# Lake Seminole	27	15.62	575.22	590.83	24.18	14.99	22.87	7.32	11.34	513	659
		# Woodruff	48	9.95	566.88	576.83	26.15	17.34	27.11	8.85	14.13	534	705
		# Dannelly	50	11.30	597.90	609.20	27.89	17.38	25.38	8.21	12.25	598	751
		Okatibbee Lake	21	18.20	375.04	393.24	15.70	10.30	17.05	5.34	9.00	343	460
		# Walter F. George	39	70.26	1,845.18	1,915.44	83.58	49.60	75.98	24.01	37.70	1,714	2,234
		# West Point Lake	27	47.72	740.80	788.52	32.63	20.89	33.79	11.03	17.99	647	877
		George W. Andrews Lake	46	0.81	125.46	126.27	5.65	3.71	6.14	1.92	3.24	123	166
		Black Warrior & Tombigbee Lakes	28	11.71	1,287.99	1,299.70	53.16	34.87	57.76	18.08	30.50	1,160	1,559
	Savannah	# J. Strom Thurmon	10	185.03	2,148.84	2,333.87	88.82	56.89	93.10	29.40	49.14	1,901	2,538
		# Hartwell Lake	32	128.49	4,037.59	4,166.08	175.20	117.22	195.56	61.39	104.10	3,676	5,011
		Richard B. Russell Dam and Lake	55	6.73	358.48	365.20	17.12	11.23	18.60	5.82	9.82	374	502
		New Savannah Bluff L & D	1	0.00	104.58	104.58	3.66	2.40	3.98	1.25	2.10	80	107
	Wilmington	# Falls Lake	36	7.84	760.96	768.80	32.79	21.11	31.19	11.72	17.26	648	804
		# John H. Kerr	27	140.36	1,172.01	1,312.37	55.13	33.33	54.72	16.34	27.45	1,274	1,665
		# B. Everett Jordan	12	101.48	664.84	766.33	30.06	19.49	29.10	10.79	16.05	600	751
		# Philpott Lake	14	12.09	407.19	419.29	16.01	9.51	14.59	4.71	7.45	360	462
		# W. Kerr Scott	26	17.14	571.92	589.06	24.00	14.82	21.91	7.65	11.34	523	657
		Cape Fear R. <3 L's. And Dams>	5	0.00	15.74	15.74	0.56	0.37	0.61	0.19	0.32	12	17

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
SPD	Los Angeles	Alamo Lake	77	3.31	22.13	25.44	1.35	0.88	1.46	0.46	0.77	29	39
		Santa Fe Dam	1	0.00	163.02	163.02	5.71	3.74	6.20	1.94	3.27	125	167
		Mojave R. Dam	0	3.99	0.08	4.07	0.20	0.13	0.22	0.07	0.11	4	6
		Painted Rock Dam	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
		Brea Dam	0	0.00	63.17	63.17	2.20	1.44	2.39	0.75	1.26	48	64
		Carbon Canyon Dam	0	0.00	84.22	84.22	2.93	1.92	3.18	1.00	1.68	64	86
		Fullerton Dam	0	0.00	69.53	69.53	2.42	1.59	2.63	0.82	1.39	53	71
		Prado Dam	0	3.33	211.98	215.31	7.54	4.95	8.20	2.56	4.33	165	221
		# Whittier Narrows	0	3.33	783.39	786.72	27.43	22.70	40.82	12.24	22.68	451	673
		# Sepulveda Dam	0	0.00	801.51	801.51	27.90	23.07	41.41	12.45	22.97	459	682
		# Hansen Dam	0	0.00	418.16	418.16	14.55	12.04	21.60	6.49	11.98	240	356
		Salinas Dam Santa Margarita L.	25	0.00	25.98	25.98	1.04	0.68	1.13	0.35	0.60	23	31
	Sacramento	# Black Butte	23	9.46	34.37	43.83	1.87	1.11	1.77	0.57	0.91	37	48
		Lake Sonoma	31	11.65	183.68	195.34	8.25	5.41	8.96	2.80	4.73	180	242
		# Englebright	49	6.72	16.76	23.48	1.15	0.72	1.34	0.40	0.76	22	32
		Martis Creek Lake	4	1.74	8.50	10.24	0.39	0.26	0.42	0.13	0.22	9	11
		# New Hogan	45	27.26	54.83	82.09	3.99	2.24	3.90	1.19	2.14	76	104
		Stanislaus R. Parks	18	0.22	151.57	151.79	5.87	3.85	6.38	2.00	3.37	128	172
		# Pine Flat	49	10.21	167.79	178.00	8.20	5.46	9.93	3.05	5.59	157	222
		# Success	24	8.87	198.25	207.12	8.39	5.50	8.99	2.89	4.80	169	224
		# Kaweah	26	6.23	14.53	20.75	0.92	0.60	0.99	0.32	0.53	19	25
		# Eastman	19	2.64	25.51	28.15	1.13	0.68	0.98	0.38	0.54	19	24
		# Hensley	37	4.99	44.86	49.85	2.19	1.31	1.87	0.73	1.04	37	46
		!# Mendocino	22	38.20	281.17	319.38	13.14	8.31	14.27	4.56	7.94	267	367
	San Francisco	S F Bay Model Reg'l Visitor Center	1	0.00	44.50	44.50	1.56	1.02	1.69	0.53	0.89	34	46
SWD	Albuquerque	Abiquiu Dam	8	2.37	27.58	29.96	1.13	0.74	1.23	0.38	0.65	25	33
		Cochiti Lake	10	4.65	92.82	97.47	3.67	2.40	3.98	1.25	2.10	80	107
		Conchas Lake	32	7.03	22.87	29.90	1.34	0.88	1.45	0.45	0.77	29	39

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
SWD (cont.)	Albuquerque (cont.)	Galisteo Dam	0	0.00	1.24	1.24	0.04	0.03	0.05	0.01	0.02	1	1
		Jemez Canyon Dam	0	0.00	6.34	6.34	0.22	0.14	0.24	0.07	0.13	5	6
		John Martin Dam	13	4.42	104.11	108.53	4.14	2.72	4.50	1.41	2.37	90	121
		Santa Rosa Dam and Lake	7	5.07	22.35	27.41	1.07	0.70	1.16	0.36	0.61	23	31
		Trinidad Lake	1	0.87	45.93	46.80	1.65	1.08	1.79	0.56	0.95	36	48
		Two R.S. Dam	0	0.00	0.77	0.77	0.03	0.02	0.03	0.01	0.02	1	1
	Fort Worth	Bardwell Lake	23	13.52	133.73	147.25	6.03	3.96	6.55	2.05	3.46	132	177
		# Belton Lake	22	46.70	513.34	560.04	22.76	14.05	22.21	7.42	12.01	510	655
		Benbrook Lake	10	31.12	314.63	345.76	13.21	8.67	14.35	4.49	7.58	288	387
		# Canyon Lake	22	55.52	523.92	579.44	23.64	16.61	29.30	9.35	16.47	470	671
		Cooper Lake	10	11.81	54.73	66.54	2.63	1.72	2.85	0.89	1.51	57	77
		# Lake O' the Pine	28	42.02	428.58	470.60	19.76	13.29	22.80	7.02	12.26	450	619
		# Grapevine Lake	19	26.00	514.07	540.07	21.34	16.36	26.59	9.41	15.35	381	519
		Hords Creek Lake	6	21.03	156.87	177.89	6.72	4.41	7.30	2.29	3.86	147	197
		# Joe Pool Lake	47	37.34	485.09	522.43	23.92	18.40	29.45	10.58	17.00	426	574
		# Lavon Lake	23	21.42	612.97	634.39	25.48	20.53	31.60	11.69	18.14	436	582
		# Lewisville Lake	23	68.64	825.07	893.70	36.42	27.83	46.06	16.02	26.60	653	900
		Navarro Mills Lake	11	24.68	187.08	211.77	8.22	5.39	8.93	2.79	4.71	179	241
		Proctor Lake	18	26.15	92.49	118.63	4.95	3.24	5.37	1.68	2.84	108	145
		# Sam Rayburn	40	49.95	429.96	479.91	21.46	12.94	21.70	6.64	11.43	474	633
		O. C. Fisher Lake	1	4.06	138.55	142.61	5.05	3.31	5.49	1.72	2.90	110	148
		# Somerville Lake	23	75.60	373.19	448.79	18.85	12.18	19.41	6.29	10.22	416	538
		Stillhouse Hollow Reservoir	22	10.30	126.58	136.88	5.55	3.64	6.03	1.89	3.18	121	163
		# Wright Patman	15	50.33	375.50	425.83	16.88	10.90	18.72	5.87	10.19	369	513
		# Waco Lake	16	24.62	477.67	502.29	19.54	13.01	23.14	7.01	12.60	442	616
		# Whitney Lake	17	45.09	453.46	498.55	19.78	12.86	23.65	6.79	12.66	442	629
		Aquilla Dam & Lake	22	0.00	29.83	29.83	1.18	0.77	1.28	0.40	0.68	26	35
		Ray Roberts Lake	32	21.83	203.64	225.48	9.68	6.35	10.52	3.29	5.55	211	284

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
SWD (cont.)	Fort Worth (cont.)	Town Bluff Dam B.A. Steinhagen L.	22	19.15	114.80	133.95	5.55	3.64	6.03	1.89	3.18	121	163
		Granger Lake	19	15.66	138.63	154.29	6.21	4.07	6.75	2.11	3.56	136	182
		Lake Georgetown	31	42.18	198.90	241.08	10.55	6.92	11.46	3.59	6.05	230	309
	Galveston	# Addicks Dam	0	0.00	793.30	793.30	27.61	21.70	34.91	11.72	19.38	520	702
		Wallisville Reservoir	16	0.00	60.54	60.54	2.31	1.52	2.51	0.79	1.33	50	68
		Barker Dam	0	0.00	441.09	441.09	15.35	10.07	16.68	5.22	8.81	335	450
	Little Rock	Norrell L & D - Ark. Riv. Nav. Sys.	39	0.00	12.59	12.59	0.54	0.36	0.59	0.18	0.31	12	16
		Wilbur D. Mills L & D - Ark. R. Nav. Sys.	30	10.10	124.44	134.54	5.68	3.73	6.17	1.93	3.26	124	167
		Pool 3 L & D - Ark. Riv. Nav. Sys.	16	1.38	34.10	35.48	1.37	0.90	1.49	0.47	0.79	30	40
		Pool 4 L & D - Ark. Riv. Nav. Sys.	29	0.00	251.94	251.94	10.33	6.78	11.22	3.51	5.93	225	303
		Pool 5 L & D - Ark. Riv. Nav. Sys.	11	3.35	65.64	69.00	2.61	1.71	2.84	0.89	1.50	57	77
		# David D. Terry	22	1.43	488.97	490.40	19.39	12.92	22.85	7.06	12.64	421	602
		# Murray	11	25.59	396.31	421.89	16.03	10.62	18.51	5.83	10.28	347	490
		Toad Suck Ferry L&D - Ark. R. Nav. Sys.	14	7.18	219.52	226.70	8.67	5.68	9.42	2.95	4.97	189	254
		Rockefeller L. - Ormand L&D - A.R.N.S.	10	3.53	124.13	127.67	4.76	3.13	5.18	1.62	2.73	104	140
		John Paul Hammerschmidt Lake	7	4.19	410.72	414.91	15.12	9.92	16.42	5.14	8.67	330	443
		# Beaver	27	65.10	1,114.63	1,179.73	48.73	31.85	56.11	16.38	29.31	1,122	1,576
		# Blue Mountain	25	8.89	62.74	71.63	3.00	1.71	2.55	0.78	1.21	70	86
		Clearwater Lake	26	23.59	126.72	150.32	6.38	4.19	6.94	2.17	3.66	139	187
		# Dardanelle	21	22.77	762.65	785.43	31.16	19.52	31.08	9.57	15.69	721	950
		Dequeen Lake	23	4.66	55.35	60.02	2.45	1.60	2.66	0.83	1.40	53	72
		Dierks Lake	14	10.48	59.28	69.76	2.78	1.83	3.02	0.95	1.60	61	82
		Gillham Lake	21	6.16	26.98	33.15	1.39	0.91	1.51	0.47	0.80	30	41
		# Greers Ferry Lake	21	88.57	1,952.89	2,041.46	81.40	52.02	89.16	26.05	45.20	1,902	2,616
		# Millwood	32	7.63	223.38	231.01	9.72	6.15	10.16	3.23	5.39	214	289
		# Nimrod	19	11.55	99.80	111.35	4.49	2.36	3.44	1.08	1.67	103	123
		# Norfork	48	36.60	927.97	964.57	43.97	26.92	52.30	13.01	26.36	1,058	1,563
		Ozark Lake - Ark Riv Nav Sys	6	7.87	179.24	187.11	6.86	4.50	7.46	2.33	3.94	150	201

Table B1 (Continued)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
SWD (cont.)	Little Rock (cont.)	# Table Rock	16	109.72	3,598.65	3,708.38	143.22	94.49	167.10	49.27	87.57	3,192	4,517
		# Bull Shoals	47	41.54	1,969.81	2,011.34	90.83	61.10	115.80	32.27	61.93	2,160	3,240
	Tulsa	Chouteau L & D 17	6	1.66	34.37	36.03	1.32	0.87	1.44	0.45	0.76	29	39
		Newt Graham L & D 18	6	1.25	71.08	72.32	2.63	1.72	2.85	0.89	1.51	57	77
		Pearson-Skubitz Big Hill Lake	12	7.74	56.37	64.11	2.50	1.64	2.72	0.85	1.44	55	73
		Birch Lake	7	4.63	29.10	33.74	1.29	0.85	1.40	0.44	0.74	28	38
		Broken Bow Lake	5	1.20	275.18	276.38	9.93	6.51	10.79	3.38	5.70	217	291
		# Canton Lake	15	19.24	315.59	334.83	12.99	7.72	11.60	3.29	5.33	331	407
		Copan Lake	11	5.93	57.32	63.25	2.43	1.60	2.64	0.83	1.40	53	71
		Council Grove	1	11.32	105.91	117.23	4.27	2.80	4.64	1.45	2.45	93	125
		El Dorado Lake	9	41.41	161.29	202.70	8.03	5.27	8.73	2.73	4.61	175	236
		Elk City Lake	4	5.45	40.75	46.19	1.73	1.13	1.88	0.59	0.99	38	51
		# Eufaula Lake	13	56.38	862.23	918.62	35.31	23.63	38.31	11.50	19.44	822	1,082
		Fall R. Lake	2	4.55	47.14	51.69	1.89	1.24	2.05	0.64	1.08	41	55
		# Fort Gibson Lake	6	43.98	1,086.01	1,130.00	41.40	30.02	48.20	16.38	26.77	857	1,164
		Fort Supply Lake	3	6.44	32.79	39.23	1.48	0.97	1.61	0.50	0.85	32	44
		Great Salt Plains	1	9.26	94.33	103.58	3.76	2.47	4.09	1.28	2.16	82	110
		Heyburn Lake	7	5.40	47.05	52.45	1.98	1.30	2.15	0.67	1.14	43	58
		Hugo Lake	10	6.22	102.01	108.23	4.09	2.68	4.44	1.39	2.34	89	120
		Hulah Lake	6	7.80	30.78	38.57	1.50	0.99	1.63	0.51	0.86	33	44
		John Redmond Reservoir	1	2.45	41.95	44.41	1.59	1.04	1.73	0.54	0.91	35	47
		Kaw Lake	7	24.45	236.76	261.20	9.83	6.45	10.68	3.34	5.64	215	288
		# Keystone Lake	12	38.70	482.52	521.22	20.02	15.76	26.56	7.97	14.09	426	595
		Marion Reservoir	6	14.06	59.03	73.09	2.84	1.86	3.09	0.97	1.63	62	83
		# Oologah Lake	11	10.16	511.93	522.09	19.54	15.36	25.90	7.78	13.75	415	579
		Optima Lake	3	0.31	13.87	14.18	0.51	0.33	0.55	0.17	0.29	11	15
		Pat Mayse Lake	3	19.84	88.31	108.15	4.12	2.70	4.48	1.40	2.36	90	121
		Pine Creek Lake	10	7.10	87.71	94.81	3.60	2.36	3.91	1.22	2.07	79	106

Table B1 (Concluded)

Division	District	Project	Pct[1] Boat	Visits in Party Days (1,000s)			Total[2] Spending	Sales Effects[2]		Income Effects[2]		Job Effects[3]	
				Camper	Day User[4]	Total		Direct	Total	Direct	Total	Direct	Total
SWD (cont.)	Tulsa (cont.)	Robert S. Kerr, L & D 15	2	5.82	277.97	283.79	10.08	6.61	10.95	3.43	5.78	220	296
		# Tenkiller Ferry	15	49.86	421.80	471.66	18.62	11.69	20.22	5.63	10.24	441	599
		Toronto Lake	7	21.33	32.77	54.10	2.27	1.49	2.47	0.77	1.30	50	67
		Waurika Lake	13	9.43	174.60	184.04	7.05	4.62	7.66	2.40	4.04	154	207
		Webbers Falls L & D 16	6	2.48	184.03	186.51	6.76	4.44	7.35	2.30	3.88	148	198
		Wister Lake	2	12.19	110.22	122.41	4.49	2.95	4.88	1.53	2.58	98	132
		WD Mayo L & D 14	9	0.93	41.30	42.24	1.56	1.03	1.70	0.53	0.90	34	46
		Sardis Lake	4	10.68	122.50	133.18	4.90	3.22	5.33	1.67	2.81	107	144
		# Texoma Lake	24	121.85	2,029.78	2,151.63	87.56	66.93	114.30	31.44	55.86	1,904	2,722
		Arcadia Lake	14	8.08	126.28	134.36	5.19	3.40	5.64	1.76	2.98	113	152
		Truscott Brine Lake, Area VIII	20	0.00	2.39	2.39	0.09	0.06	0.10	0.03	0.05	2	3
		Skiatook Lake	7	6.56	154.26	160.82	5.93	3.89	6.44	2.02	3.40	129	174
		Total	—	6,364	133,055	139,419	5,596	3,691	6,148	1,914	3,244	120,906	163,647
		Average	22	13.96	291.79	305.74	12.27	8.10	13.48	4.20	7.11	265.14	358.87

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Appendix C
Economic Multipliers for Regions Surrounding 108 Corps of Engineers Projects

Table C1
Economic Multipliers for Regions Surrounding 108 Corps of Engineers Projects[1]

Division	District	Project	Capture Rate[2], %	Sales		Income[3]			Jobs[4]		
				Type I	Type III	Direct	Type I	Type III	Direct	Type I	Type III
LMVD	St. Louis	Mark Twain Lake	62	1.21	1.74	0.50	0.60	0.88	38.00	41.01	51.52
		Carlyle Lake	63	1.13	1.51	0.46	0.52	0.72	36.51	38.35	45.94
		Rend Lake	67	1.14	1.49	0.46	0.54	0.72	32.31	34.31	41.18
		Shelbyville	63	1.16	1.51	0.49	0.57	0.76	33.24	35.32	41.94
		Wappapello	63	1.17	1.67	0.50	0.58	0.84	37.76	40.43	50.65
	Vicksburg	Arkabutla Lake	64	1.09	1.50	0.54	0.58	0.79	31.56	32.87	40.98
		Ouachita	63	1.17	1.80	0.53	0.62	0.96	36.94	39.90	52.79
		Degray Lake	63	1.16	1.60	0.49	0.57	0.80	37.84	40.44	49.99
		Grenada Lake	62	1.12	1.44	0.47	0.52	0.69	36.64	38.26	44.94
		Sardis Lake	63	1.12	1.49	0.47	0.52	0.72	37.75	39.35	46.87
MRD	Kansas City	Harry S. Truman	63	1.21	1.73	0.47	0.57	0.84	38.59	41.71	51.76
		Milford	63	1.23	1.69	0.44	0.55	0.80	40.19	43.97	53.35
		Pomme de Terre	60	1.17	1.77	0.43	0.52	0.83	46.89	49.66	62.01
		Rathbun Lake	61	1.19	1.74	0.50	0.59	0.89	38.10	41.02	51.93
		Smithville Lake	67	1.22	1.95	0.54	0.67	1.07	32.91	36.33	48.79
		Stockton Lake	70	1.25	1.88	0.54	0.66	1.01	32.98	36.80	48.32
	Omaha	Sharpe	62	1.19	1.77	0.50	0.59	0.92	39.06	42.24	53.90
		Chatfield Lake	71	1.22	1.74	0.54	0.67	0.97	25.78	29.02	37.36
		Cherry Creek	71	1.22	1.74	0.54	0.67	0.97	25.78	29.02	37.36
		Lewis and Clark	63	1.23	1.37	0.49	0.59	0.66	40.41	44.14	48.62
		Oahe	78	1.22	1.87	0.47	0.58	0.93	32.77	36.02	48.63
NAD	Baltimore	Raystown	63	1.15	1.65	0.54	0.61	0.89	37.49	39.91	48.94
	Philadelphia	Blue Marsh Lake	65	1.18	1.69	0.57	0.66	0.94	31.99	34.41	42.52
NCD	Rock Island	Saylorville Lake	67	1.28	1.99	0.55	0.71	1.11	33.22	37.40	49.75
NPD	Portland	Lake Celilo	62	1.15	1.57	0.57	0.65	0.88	36.56	38.85	47.24
		Lake Umatilla	56	1.11	1.37	0.46	0.51	0.66	38.99	40.72	46.19
		Bonneville	71	1.24	1.72	0.59	0.72	1.00	29.95	33.32	41.21
		Willamette Lakes[5]	64	1.14	1.73	0.58	0.66	0.99	36.19	37.95	49.12

Notes: LMVD = Lower Mississippi Valley; MRD = Missouri River; NAD = North Atlantic; NCD = North Central; NPD = North Pacific; ORD = Ohio River; SAD = South Atlantic; SPD = South Pacific; SWD = Southwestern.

[1] Region defined as all counties within 48-km (30-mile) radius of the project. For the purposes of this report, actual economic impact models have been built for 108 of the total 456 projects.

[2] Capture rate is the percentage of visitor spending captured as direct sales within the region.

[3] Income per dollar of direct sales. Income includes employee compensation, proprietor, and other property income.

[4] Jobs per million dollars in direct sales.

[5] Willamette Lakes include Fern Ridge Lake, Cottage Grove Lake, and Fall Creek Lake. These three lakes were treated as a single project in the 12-lake survey (Propst et al. 1992) for sampling purposes. (References cited in this appendix are listed in the References at the end of the main text.)

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Table C1 (Continued)

Division	District	Project	Capture Rate[2], %	Sales		Income[3]			Jobs[4]		
				Type I	Type III	Direct	Type I	Type III	Direct	Type I	Type III
NPD (cont.)	Walla Walla	Dworshak	57	1.10	1.37	0.53	0.58	0.74	40.10	42.25	48.85
		Lower Granite	62	1.17	1.71	0.49	0.58	0.89	40.88	43.78	55.35
		McNary	61	1.17	1.60	0.51	0.60	0.84	35.28	37.99	46.35
ORD	Huntington	Alum Creek Lake	66	1.22	1.66	0.59	0.70	0.95	29.99	33.05	39.87
		Bluestone Lake	63	1.17	1.81	0.51	0.60	0.94	34.67	37.15	49.20
		Deer Creek Lake	66	1.21	1.62	0.59	0.71	0.93	29.66	32.68	39.00
		Summersville	60	1.11	1.59	0.50	0.56	0.83	37.37	39.28	50.03
		Senecaville Lake	66	1.14	1.59	0.53	0.59	0.83	34.63	36.68	45.19
	Louisville	Barren R. Lake	64	1.19	1.68	0.51	0.60	0.86	36.48	39.92	49.64
		William H. Harsha	68	1.24	1.78	0.59	0.72	1.03	28.93	32.30	40.95
		Cecil M. Harden	64	1.15	1.59	0.52	0.60	0.84	37.14	39.57	48.21
		Monroe Lake	62	1.17	1.57	0.52	0.60	0.82	35.61	38.21	46.07
		Nolin R. Lake	63	1.19	1.60	0.50	0.60	0.81	37.35	40.63	48.86
		Rough R. Lake	62	1.17	1.56	0.48	0.57	0.77	39.29	41.95	49.73
	Nashville	Barkley	65	1.20	1.79	0.49	0.60	0.92	34.97	37.98	49.22
		Center Hill	61	1.16	1.59	0.49	0.57	0.80	32.50	34.98	43.23
		Cheatham	69	1.25	1.82	0.54	0.68	1.00	27.24	30.84	39.94
		Cordell Hull	61	1.15	1.59	0.50	0.58	0.81	32.31	34.87	43.01
		Dale Hollow	64	1.15	1.52	0.49	0.56	0.75	34.38	36.82	44.25
		J. Percy Priest	69	1.25	1.88	0.54	0.68	1.02	27.35	30.93	40.99
		Laurel R.	72	1.16	1.63	0.49	0.57	0.82	33.65	36.25	45.90
		Cumberland	68	1.15	1.58	0.47	0.53	0.75	34.58	37.22	46.54
	Pittsburgh	Shenango R.	67	1.19	1.85	0.52	0.61	0.98	36.15	38.95	50.65
SAD	Mobile	Allatoona Lake	67	1.21	1.56	0.59	0.70	0.91	26.16	28.77	34.18
		Sidney Lanier	67	1.20	1.74	0.58	0.69	0.99	27.39	30.09	38.85
		Lake Seminole	62	1.15	1.53	0.49	0.56	0.76	34.21	36.46	43.97
		Woodruff	66	1.20	1.56	0.51	0.62	0.81	30.79	33.89	40.68
		Dannelly	62	1.15	1.46	0.47	0.54	0.70	34.42	36.64	43.21
		Walter F. George	59	1.16	1.53	0.48	0.56	0.76	34.56	36.99	45.04
		West Point Lake	64	1.17	1.62	0.53	0.61	0.86	30.96	33.60	41.99
	Savannah	J. Strom Thurmon	64	1.19	1.64	0.52	0.62	0.86	33.41	36.36	44.62
		Hartwell Lake	67	1.20	1.67	0.52	0.63	0.89	31.36	34.34	42.75

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Table C1 (Continued)

Division	District	Project	Capture Rate[2], %	Sales		Income[3]			Jobs[4]		
				Type I	Type III	Direct	Type I	Type III	Direct	Type I	Type III
SAD (cont.)	Wilmington	Falls Lake	64	1.13	1.48	0.56	0.62	0.82	30.69	32.12	38.08
		John H. Kerr	60	1.15	1.64	0.49	0.56	0.82	38.24	40.45	49.95
		B. Everett Jordan	65	1.13	1.49	0.55	0.62	0.82	30.81	32.28	38.53
		Philpott Lake	59	1.12	1.53	0.50	0.56	0.78	37.85	40.34	48.55
		W. Kerr Scott	62	1.11	1.48	0.52	0.57	0.77	35.32	36.86	44.31
SPD	Los Angeles	Whittier Narrows	83	1.25	1.80	0.54	0.68	1.00	19.87	22.73	29.66
		Sepulveda Dam	83	1.25	1.79	0.54	0.68	1.00	19.91	22.74	29.55
		Hansen Dam	83	1.25	1.79	0.54	0.68	1.00	19.91	22.74	29.55
	Sacramento	Black Butte	59	1.14	1.60	0.51	0.58	0.82	33.62	35.66	43.59
		Englebright	63	1.18	1.87	0.55	0.66	1.05	30.37	33.20	44.23
		New Hogan	56	1.15	1.74	0.53	0.61	0.95	33.87	36.20	46.35
		Pine Flat	67	1.24	1.82	0.56	0.69	1.02	28.68	32.06	40.74
		Success	66	1.22	1.64	0.53	0.64	0.87	30.66	33.88	40.71
		Kaweah	66	1.22	1.64	0.53	0.64	0.87	30.66	33.88	40.71
		Eastman	60	1.09	1.43	0.56	0.60	0.79	27.98	29.41	35.06
		Hensley	60	1.09	1.43	0.56	0.60	0.79	28.02	29.42	35.02
		Mendocino	63	1.18	1.72	0.55	0.65	0.96	32.08	34.91	44.15
SWD	Fort Worth	Belton Lake	62	1.16	1.58	0.53	0.62	0.86	36.31	39.11	46.64
		Canyon Lake	70	1.21	1.76	0.56	0.68	0.99	28.29	31.42	40.43
		Lake O' the Pine	67	1.18	1.72	0.53	0.62	0.92	33.85	36.57	46.55
		Grapevine Lake	77	1.20	1.62	0.58	0.69	0.94	23.29	25.73	31.72
		Joe Pool Lake	77	1.20	1.60	0.57	0.69	0.92	23.13	25.57	31.19
		Lavon Lake	81	1.19	1.54	0.57	0.68	0.88	21.25	23.53	28.32
		Lewisville Lake	76	1.20	1.66	0.58	0.69	0.96	23.46	25.93	32.35
		Sam Rayburn	60	1.17	1.68	0.51	0.60	0.88	36.67	39.29	48.92
		Somerville Lake	65	1.17	1.59	0.52	0.61	0.84	34.12	36.60	44.18
		Wright Patman	65	1.17	1.72	0.54	0.63	0.93	33.82	36.69	47.04
		Waco Lake	67	1.20	1.78	0.54	0.65	0.97	33.97	37.11	47.37
		Whitney Lake	65	1.18	1.84	0.53	0.62	0.98	34.36	37.18	48.90
	Galveston	Addicks Dam	79	1.19	1.61	0.54	0.65	0.89	23.96	26.28	32.34
	Little Rock	David D. Terry	67	1.23	1.77	0.55	0.68	0.98	32.60	36.77	46.59
		Murray	66	1.23	1.74	0.55	0.68	0.97	32.65	36.82	46.12
		Beaver	65	1.22	1.76	0.51	0.63	0.92	35.24	39.27	49.47
		Blue Mountain	57	1.15	1.49	0.45	0.52	0.71	40.94	43.20	50.39

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Table C1 (Concluded)

Division	District	Project	Capture Rate[2], %	Sales		Income[3]			Jobs[4]		
				Type I	Type III	Direct	Type I	Type III	Direct	Type I	Type III
SWD (cont.)	Little Rock (cont.)	Dardanelle	63	1.17	1.59	0.49	0.58	0.80	36.96	39.83	48.66
		Greers Ferry Lake	64	1.17	1.71	0.50	0.59	0.87	36.56	39.32	50.29
		Millwood	63	1.17	1.65	0.53	0.62	0.88	34.77	37.69	46.95
		Nimrod	53	1.14	1.46	0.45	0.53	0.71	43.36	45.51	51.82
		Norfork	61	1.16	1.94	0.48	0.57	0.98	39.29	42.25	58.05
		Table Rock	66	1.21	1.77	0.52	0.62	0.93	33.78	37.09	47.80
		Bull Shoals	67	1.18	1.90	0.53	0.62	1.01	35.35	38.49	53.03
	Tulsa	Canton Lake	59	1.18	1.50	0.43	0.52	0.69	42.80	46.24	52.68
		Eufaula Lake	67	1.19	1.62	0.49	0.59	0.82	34.79	37.86	45.81
		Fort Gibson Lake	73	1.13	1.61	0.55	0.62	0.89	28.54	30.55	38.79
		Keystone Lake	79	1.22	1.69	0.51	0.63	0.89	27.01	30.23	37.74
		Oologah Lake	79	1.22	1.69	0.51	0.63	0.90	27.04	30.29	37.72
		Tenkiller Ferry	63	1.22	1.73	0.48	0.60	0.88	37.69	41.46	51.29
		Texoma Lake	76	1.17	1.71	0.47	0.56	0.83	28.44	31.08	40.68
Average			66	1.18	1.66	0.52	0.61	0.87	33.27	36.00	44.71

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13. ABSTRACT ***(Maximum 200 words)***

This report presents separate project-level estimates of the economic effects of visitor spending within local regions surrounding Corps of Engineers (CE) projects. In 1996, visitors to CE projects spent over $5.5 billion on trip-related goods and services in local regions (within 48 km (30 miles)) around CE projects. This spending was associated with over $3.2 in income and 163 thousand jobs in these local regions. It is recognized that significant visitor spending and associated economic activity occur outside the regions adjacent to CE projects. However, it is important to understand local economic effects because they may be particularly sensitive to management actions affecting recreation-use patterns and spending behavior.

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